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# Coping with Information Technology: Mixed Emotions, Vacillation, and Nonconforming Use Patterns

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## COPING WITH INFORMATION TECHNOLOGY: MIXED EMOTIONS, VACILLATION, AND NONCONFORMING USE PATTERNS<sup>1</sup>

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*Achieving the promised business benefits of an IT system is intimately tied to the continued incorporation of the system into the work practices it is intended to support. While much is known about different social, cognitive, and technical factors that influence initial adoption and use, less is known about the role of emotional factors in users' behaviors. Through an in-depth field study conducted in two North American universities, we examine the role of emotions in how specific IT use patterns emerge. We find that there are five different characteristics of an IT stimulus event (cues) that, when interacting in a reinforcing manner, elicit a single class of emotions (uniform affective responses) and, when interacting in an oppositional manner, elicit mixed emotions (ambivalent affective responses). While users respond to uniform emotions with clear adaptation strategies, they deal with ambivalent emotions by combining different adaptation behaviors, a vacillating strategy between emphasizing positive and negative aspects of the stimulus. Surprisingly, these ambivalent emotions and vacillating strategies can lead to active and positive user engagement, exhibited in task and tool adaptation behaviors and improvisational use patterns that, despite their nonconformity to terms of use, can have positive organizational implications.*

**Keywords:** Emotions, IT use patterns, adaptation behaviors, ambivalence, qualitative research

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<sup>1</sup>Suprateek Sarker was the accepting senior editor for this paper. Jens Dibbern served as the associate editor.

The appendices for this paper are located in the "Online Supplements" section of the *MIS Quarterly*'s website (<http://www.misq.org>).

## Introduction

Continued, post-adoption use and nonuse of information technology (IT) is a topic of increasing interest in the Information Systems (IS) literature (Kane and Labianca 2011; Limayem et al. 2007; Ortiz de Guinea and Markus 2009). Post-adoption use is typically conceptualized as an individual's employment of technology features to accomplish a task, including the various learning and exploration activities that may be necessary for successful IT-supported task accomplishment (Barki et al. 2007; Burton-Jones and Straub 2006; Saeed and Abdinnour 2013). Nonuse of IT is often described in terms of user resistance (Lapointe and Rivard 2005), but with increasing recognition that not all resistance is counterproductive (Bagayogo et al. 2013; Rivard and Lapointe 2012), and that various forms of nonuse exist (Satchell and Dourish 2009). In this paper, we examine patterns of behavior that may contain elements of both use and nonuse, such as embracing the technology and using it as developers intended, ignoring a technology in the hope that it will go away, or using only some features.

Our interest in these patterns focuses on the *role of emotions* in IT use (Bagozzi 2007; Beaudry and Pinsonneault 2010; Ortiz de Guinea and Markus 2009). In technology acceptance research (e.g., Davis 1989) there are a few empirically grounded extensions of TAM that include emotions (e.g., Venkatesh 2000), but there is a recognized dearth of systematic theory development on the effects of emotions on technology use (Bagozzi 2007). In the case of practice-oriented explanations of technology use (Orlikowski 2000, 2007), while processes of "subjective creativity and meaning-making" are illuminated, the "subjective experience of agency"—how human agents feel about themselves and their circumstances—tends to be devalued (Thompson 2012, p. 189). Given this lack of attention to emotions, our theories around IT use, and our practical solutions geared toward encouraging use, tend to be based on the assumption of purely rational, goal-oriented individuals (Bagozzi 2007; Thompson 2012).

We address this limitation by considering how patterns of use arise from a process of interacting cues that elicit emotion(s) and in turn different coping strategies which then become reflected in particular use patterns. Prior research suggests that an IT stimulus event (e.g., the implementation of new software) elicits a particular emotion depending on how it is appraised: as threat or opportunity, as controllable or not (Beaudry and Pinsonneault 2010). Depending on the evaluative assessment, one of four classes of emotions may be triggered: loss, deterrence, achievement, or challenge. Until now, only relationships between specific uniform emotions

(e.g., anger as representative of the "loss" class of emotions) and IT use have been examined, while "most events and artifacts have the potential of triggering an *array of emotions* in an individual" (Beaudry and Pinsonneault 2010, p. 694). This array of emotions may be of the same class (a uniform response), or of different classes (a mixed response), reflecting emotional ambivalence (Pratt and Doucet 2000). Prior research also indicates that emotions are associated with IT use through their influence on adaptation behaviors or strategies (Beaudry and Pinsonneault 2005). For example, anxiety has a positive indirect effect (through users seeking social support), and a negative indirect effect (through psychological distancing) on IT use. The behaviors of seeking social support and psychological distancing are part of a general disturbance handling strategy and help to restore emotional stability and minimize the perceived threat (ibid.). While these findings help in understanding the links between emotions and IT use, there are three particular issues that deserve further attention. First, the *affective characteristics* or *cues* (Zhang 2013) in an IT stimulus event that are appraised and that elicit the four classes of emotion remain largely unexplored. Second, the strategies users employ when faced with *mixed* (rather than *uniform*) emotions in response to an IT stimulus event remains an open question. Third, Beaudry and Pinsonneault (2010, p. 699) conceptualize IT use as the "extent to which one actively interacts with the new IT while performing one's job," measured as the self-reported frequency of performing certain tasks with the IT. Thus, the link between emotions and IT use—as a set of qualitatively distinct patterns—remains unstudied.

In line with these open issues, this study focuses on two research questions:

- (1) *What (and how do) interacting aspects of an IT stimulus event elicit uniform and mixed emotions in users?*
- (2) *How do users cope with uniform and mixed emotions and how are these coping strategies reflected in patterns of IT use?*

We address these questions through an in-depth field study conducted across two settings implementing the same standardized software package.

Theoretically, our contribution is threefold. First, we offer a more developed understanding of the various affective cues present in an IT stimulus event, and how they can separately and interactively elicit different (sometimes ambivalent) emotions. Second, we confirm and extend the existing process-oriented understanding of how IT stimulus events, emotions, and IT use are linked. Our findings largely confirm that,

where affective responses are uniform, clear adaptation strategies (see Beaudry and Pinsonneault 2010) follow. These uniform affective responses and corresponding adaptation strategies lead to either use patterns characterized by support and conformance to IT terms of use, or use patterns characterized by resistance and nonconformity. Through a better understanding of the IT stimulus event, we extend the Beaudry and Pinsonneault model by considering *impure forms*, where mixed affective responses (i.e., where two or more classes of emotions are experienced simultaneously, indicating some tension or ambivalence in the response) are elicited by cues interacting in an oppositional manner. Our findings suggest that users cope with mixed affective responses by combining various adaptation behaviors, forming a *vacillating* strategy between positive–negative approach behaviors. Interestingly, our data show that this strategy is reflected in use patterns that *do not* conform to IT terms of use, but can still be organizationally beneficial (see Bagayogo et al. 2013). Third, we offer a better understanding of IT use as the outcome of affective responses and coping strategies. By conceptualizing and studying IT use as qualitatively distinct patterns with nuanced elements of both use and nonuse, we show how emotions lead to characteristic behaviors in people’s IT use that go beyond just more or less use. Practically, we suggest that the most fruitful avenue open to IT managers and implementers in changing use behaviors or turning around an ailing IT implementation project is by attending to the affective cues and their interactions.

The rest of this paper is structured as follows: next, we introduce the theoretical foundation for the study, followed by an explanation of the research method adopted. We then present our findings and close the paper with a discussion of key insights arising from the study.

## IT Use Patterns

Successful initial adoption of technology does not necessarily lead to continued use (Kim and Malhotra 2005). Existing conceptualizations and measurements of IT use, which have tended to focus on intentions to use, do not, therefore, adequately capture the phenomenon of continued use where not all system functionality may be employed as expected (Ferneley and Sobreperez 2006). In response, feature-centric definitions and models of IT use have been developed (e.g., Jaspersen et al. 2005), denoting a significant shift from the black-box IT system view inherent in technology acceptance research (Davis 1989; Venkatesh et al. 2008). This shift has led to a definition of individual-level IT use as “an individual

user’s employment of one or more features of a system to perform a task” (Burton-Jones and Straub 2006, p. 6).

An expanded conceptualization of IT use that includes three elements (technology interactions, task–technology adaptation, individual adaptation behaviors) has also been proposed (Barki et al. 2007, p. 176), thus emphasizing that users do not just interact with IT, but also engage in adaptation behaviors. While both interaction and adaptation behaviors can be considered dimensions of the same broad IT use-related activity construct (*ibid.*), earlier process-oriented research shows that adaptation behaviors can precede actual interactions with the IT, which may then lead to further adaptations (Beaudry and Pinsonneault 2005, 2010). Conceptualized as problem- and/or emotion-focused acts that users perform in order to cope with the perceived or anticipated consequences of an IT event (Beaudry and Pinsonneault 2005, p. 494), adaptation behaviors form a mediating link between individual reactions to new IT and the physical interaction behaviors that come to characterize their use of this IT.

Turning to technology interaction behaviors, most research has focused on *use* behaviors, while *nonuse* has been less frequently investigated (Selwyn 2003). Research on resistance (e.g., Hirschheim and Newman 1988; Kane and Labianca 2011; Lapointe and Rivard 2005; Markus 1983; Rivard and Lapointe 2012; Selander and Henfridsson 2012) has come closest to examining nonuse; however, nonuse and resistance are not equivalent (van Offenbeek et al. 2013). We refer to both *use* and *nonuse* to indicate a broader set of interactions that people have with IT, and the possibility that not all forms of nonuse are negative or the result of individual deficits (Selwyn 2003). Use and nonuse are, therefore, not an either–or choice, but rather, “a complex, fluid and ambiguous issue guided by ‘goodness-of-fit’ with [users’] lives” (*ibid.*, p. 110). Different combinations of use and nonuse behaviors have been identified, such as expanded, integrative and exploratory use (Saeed and Abdinnour 2013); avoidance (Kane and Labianca 2011); cynicism (Selander and Henfridsson 2012); lagging adoption; disenchantment; disinterest (Satchell and Dourish 2009); and noncompliance (Sobreperez 2008). Such combinations often describe a *configuration* of collective use: distinct *patterns* of interaction behavior among members of a collective (Burton-Jones and Gallivan 2007). These patterns can be distinguished according to three dimensions (*ibid.*, p. 668): system-centered (sets of features used and not used), user-centered (sets of cognitions and affect that the users engage the system with), and task-centered (sets of tasks for which the system is employed).

While these dimensions help to describe people’s interactions with IT (from here on referred to as *use patterns*, although we emphasize again that the patterns involve both use and nonuse



behaviors), they tell us little about whether these interactions are in line with organizational expectations. Use patterns can rarely be assessed at face value: not all use behaviors constitute *acceptance* (a positive result) and not all nonuse behaviors constitute *resistance* (a negative result). We agree with the suggestion of van Offenbeek and colleagues (2013) that users who are positively disposed toward a technology may not use it and, conversely, users who are resistant toward a technology may use it. Hence, acceptance and resistance should not be conceptualized as two ends of a continuum, but rather as two separate constructs. The support/resistance dimension ranges from enthusiastic support to aggressive resistance and is defined as “support or opposition by an actor, or a group of actors, to the change associated with information system implementation” (ibid., p. 438). The acceptance/nonacceptance dimension ranges from high use to nonuse and is defined as “user’s employment, or not, of an information system to perform a task” (ibid., p. 438). This definition of acceptance, however, makes it equivalent to IT use and posits that IT use can be measured on a continuum. As our aim is to study IT use in terms of qualitatively distinct patterns, we chose not to adopt the acceptance/nonacceptance dimension from this work. Instead, we combine the support/resistance dimension with that of conformity to organizational intent (Bagayogo et al. 2013). This allows for the positioning of IT use patterns (i.e., sets of use and nonuse behaviors) along two dimensions: the level of support or resistance the set of behaviors show toward the new IT, and the level of conformity the set of behaviors show toward the organizational intent.

This conceptualization is in line with the idea of effective use (Burton-Jones and Grange 2013) in that IT systems are not implemented and used for their own sake, but in order to achieve desired outcomes. Thus, from an organizational perspective, IT use is effective when it helps to achieve organizational goals (i.e., *in line with organizational intent*). Typically, organizations communicate their intent through IT terms of use or statements about how users are expected to make use of the IT, for example, in official usage policies, training manuals, or informal communications (Bagayogo et al. 2013). However, conforming use behaviors may have adverse, unintended consequences. For example, conforming to the terms of use of enterprise systems can slow down work processes when exceptions occur (ibid.). Thus, nonconformance may have positive effects in terms of actual organizational intent (e.g., improving efficiency).

In this paper, we consider how both support/resistance and conformance/nonconformance, enacted in distinct patterns of use, arise from emotions elicited by an IT implementation event. Thus, in the next section, we turn to research on emotions in IT.

## Emotions and IT Use Patterns

Studies examining the role of emotions in IT use remain rare, despite calls to pay more explicit attention to the topic (McGrath 2006; Ortiz de Guinea and Markus 2009). Although attempts have been made to incorporate emotions into existing models of technology acceptance and use (e.g., Bhattacharjee 2001; Venkatesh 2000), multiple issues have been identified in response to these studies and the more general consideration of emotions in IS research. These include (1) extensions to existing models to incorporate emotions tend to be *ad hoc*, rather than following rigorous theory development; (2) an abundance of and confusion around different emotion-related concepts; (3) overreliance on a variance approach, with processes linking an IT stimulus event, emotions, and IT use little explored; and (4) limited understanding of what it is in an IT stimulus event that actually elicits emotions.

First, TAM extensions, which include the role of emotions, have been *ad hoc*: “the practice has been to take a rather empirical approach by adding various measures of affect to TAM” (Bagozzi 2007, pp. 248-249). A potential reason for this is the second identified issue: a lack of clarity around various emotion-related concepts and their relations (Zhang 2013). With so many concepts (e.g., emotion, mood, attitude, affect), each with numerous definitions (see Elfenbein 2007), it is no wonder that confusion and contradictions arise (Zhang 2013). To avoid these pitfalls and to contribute to the creation of a consistent and cumulative body of knowledge on emotion in IS, we build on recent research that attempts to unify and define various emotion-related concepts in IS research (ibid.). The particular concepts important in our study are the IT stimulus event and its affective characteristics (cues) (together, affective antecedents; see Table 1), and induced affective states and affective evaluations (together, affective responses; see Table 1). As prior research has rarely made the distinction between induced affective states and affective evaluations, and users often mix and speak of both when describing their affective responses, we use the terms *emotion* and *affective response* interchangeably.

The third issue points to the prevalence of the variance approach in most extant research (see Table 2). The 16 papers reviewed by Beaudry and Pinsonneault (2010) that deal specifically with emotions in IT use, and the 19 papers reviewed by Zhang (2013) that study various relationships among affective concepts in the IT literature, all adopt a variance approach. Together with our own literature review, these papers are suggestive of a focus on identifying various important affective antecedents of IT use, while the *process* through which emotions arise and have influence on use remains relatively unexplored (Bagozzi 2007; Beaudry and

**Table 1. Definitions of Relevant Emotion-Related Concepts (adapted from Zhang 2013)**

Concept	Definition
<b>Affective antecedents:</b> (a) IT stimulus event (b) Affective characteristics (cues) of the IT stimulus event	(a) Stimulus is something or some event to which a person reacts or responds. It is a psychological concept; it can be real, imagined, fictitious, remembered, in the future or anticipated, or in other forms of virtual reality. (b) Affective characteristics (or cues) are stimulus' features, properties or natures that contain affective information. These characteristics may stem directly from the IT itself, or from the environmental context, as in the ecosystem view of IT use.
<b>Affective responses:</b> (a) Induced affective states (i.e., emotions) (b) Affective evaluations	Affective response is a general term to represent concepts whose meanings reside between a person and a stimulus. Affective responses include (a) Induced affective states (i.e., emotions). Emotions arise as reactions to situational events that are appraised to be relevant to a person's needs, goals or concerns. Once activated, emotions generate subjective feelings, motivational states with action tendencies, arouse the body with energy-mobilizing responses that prepare it for adapting to the situation faced, and express the quality and intensity of emotionality outwardly to others. Emotion is, thus, defined as an episode of interrelated, synchronized changes in the states of all or most of the five organismic subsystems (cognitive, neurophysiological, motivational, motor expression and subjective feeling) (Scherer 2005, p. 697). (b) Affective evaluations or a person's appraisals of the stimulus' affective characteristics. These appraisals can be outcome- or process-based and oriented toward an object (e.g., IT artifact) or a behavior (e.g., IT use).

Pinsonneault 2005). There are two linkages in this process that are of particular interest to us: that between an IT stimulus event and affective responses to this (Group A, Table 2), and that between affective responses and IT use (Group B, Table 2). The fourth issue is related to the limited scope of factors explored when considering the first link. Beyond considerations of design and usability of IT, little is known about IT stimulus events and how these influence affective responses. Our study attempts to address these issues by contributing to a more systematic and process-oriented understanding of IT stimulus events eliciting affective responses and these responses influencing IT use.

It has been posited that individuals evaluate or appraise any IT stimulus event (e.g., software implementation) along two dimensions: first, to determine whether the stimulus constitutes a threat or an opportunity, and second, to assess how much control individuals have over the expected consequences (Beaudry and Pinsonneault 2010). Depending on the evaluative assessment, one of four classes of emotions may be triggered: *loss* (anger, dissatisfaction), activated by appraisals of threat and low control; *deterrence* (anxiety, fear), initiated by appraisals of threat and high control; *achievement* (satisfaction, enjoyment), sparked by appraisals of opportunity and low control; and *challenge* (excitement, hope), triggered by appraisals of opportunity and high control (ibid.). However, what it is in an IT event (the *characteristics* or *cues*) that is appraised and that elicits these emotions remains unexplored.

Prior research in other contexts indicates some plausible suggestions as to what aspects of an IT stimulus event might

trigger affective responses. Affective events theory argues that workplace emotions are often activated by interactions with coworkers, customers, or supervisors (Weiss and Corpanzano 1996). Such interactions are also part of IT implementation and use experiences. Physical artifacts have been shown to elicit emotions in three ways (Rafaeli and Vilnai-Yavetz 2004): instrumentally (by supporting or hindering task achievement), symbolically (by association with ideas), and aesthetically (through sensory reactions to the artifact's presentation). Emotions are also triggered by identity work (Boudens 2005): organizational change often elicits emotions because it challenges or verifies people's identities (Kiefer and Müller 2003), or leads to reflexive self-comparisons (Obodaru 2012). For similar reasons, technological change may initiate affective responses, such as existential anxiety or feelings of personal meaninglessness (Walsham 1998).

The ability to unpack an IT stimulus event into a set of *cues* allows us to consider the potential for such events to trigger not just a single emotion, or class of emotions, but an array of emotions (Beaudry and Pinsonneault 2010). Rafaeli and Vilnai-Yavetz (2004) showed that individuals often relate to physical artifacts in all three ways (instrumentally, symbolically, and aesthetically), suggesting that various cues within an IT event may interact and produce mixed affective responses. For example, it is possible for an individual to react positively to the aesthetic design of the IT while reacting negatively to its instrumental qualities. IT events, thus, can be considered complex stimuli that may elicit multiple emotions (see Elfgenbein 2007). The concept of *emotional ambiv-*

**Table 2. Illustrative Examples of Studies on Affect in IT Use**

Definitions of Studied Concepts According to Zhang (2013)	Affective Concepts Studied	Empirical Relationship Studied	Method (Process or Variance)	Main Findings	Citation
<b>Group A: Studies looking at how IT is a stimulus inducing affect/influencing behavior</b>					
Affective characteristics of ICT stimulus; induced affective state	Webpage design factors (shape, color); emotions (feelings, impressions)	Affective characteristics of stimulus → Induced affective state	Variance: Experiment and survey	Various relationships between design elements and emotions (e.g., blue background → does not create feelings of 'brightness')	Kim et al. (2003)
Affective characteristics of ICT stimulus; affective evaluation	Mood-relevant cues (e.g., visual appeal of a website); perceived enjoyment	Affective characteristics of stimulus → Affective evaluation	Variance: Experiment	Mood-relevant cues influence perceived enjoyment positively	Parboteeah et al. (2009)
Affective characteristics of ICT stimulus; affective evaluation	Visual appeal of website; immediate impression	Affective characteristics of stimulus → Affective evaluation	Variance: Survey and experiment	Website aesthetic characteristics influence the immediate impression people have	Lindgaard et al. (2006)
Affective characteristics of ICT stimulus; induced affective state	Usability and aesthetics (well-designed vs. ill-designed interface); emotions	Affective characteristics of stimulus → Induced affective state	Variance: Experiment	Well-designed system is experienced as more positive, less arousing, more pleasant, goal conducive, and less novel	Thüring and Mahlke (2007)
ICT stimulus	IT event appraisal	ICT stimulus → coping behaviors/strategies (including emotion-focused)	Process: Case study	Users appraise a significant IT event and respond to it with coping strategies, which influence their performance	Beaudry and Pinsonneault (2005)
<b>Group B: Studies looking at how affect influences IT use</b>					
Induced affective state	Satisfaction (feelings about prior IS use)	Induced affective state → use continuance intention	Variance: Field survey	Satisfaction influences continuance intentions positively	Bhattacharjee (2001)
Induced affective state	Positive and negative emotions	Induced affective state → perceived ease of use (PEU)	Variance: Survey	Positive/negative emotions are positively/negatively related to PEU	Cenfetelli (2004)
Affective evaluations	Computer playfulness; Computer anxiety; Perceived enjoyment	Affective evaluations → perceived ease of use (PEU)	Variance: Longitudinal field survey	Playfulness and perceived enjoyment are positively related to PEU; anxiety is negatively related to PEU	Venkatesh (2000)
Induced affective state; affective evaluation	Feelings (pleasure, arousal); Attitude	Induced affective state → attitude (affective evaluation) → continuance intention	Variance: Survey	Pleasure and arousal are positively related to attitudes toward use	Kim et al. (2007)
Affective evaluation	Satisfaction (evaluations/sense-making)	Affective evaluation → habit → continued IT use	Variance: Survey	Satisfaction positively influences habit formation; habit positively influences use	Lankton et al. (2010)
<b>Group C: Studies looking at both IT stimulus inducing affect and affect influencing IT use</b>					
ICT stimulus; induced affective state	IT event appraisal; emotions	ICT stimulus → Induced affective state → coping behaviors → IT use	Process/ Variance: Case study and survey	Users appraise a significant IT event and respond emotionally to it. Users deal with emotions via coping behaviors, which influence IT use	Beaudry and Pinsonneault (2010)

alence is helpful in capturing these “mixed emotions” (Pratt and Doucet 2000) and refers to the experience of both positive and negative emotions in relation to some target, such as a person, object, or symbol (Fong 2006; Pratt and Doucet 2000). While unpacking an IT stimulus event into *cues* helps in theorizing the presence of ambivalent or mixed affective responses, the question remains: What is the impact of these mixed responses?

Beaudry and Pinsonneault (2010) (Group C Table 2) demonstrate that emotions are associated with IT use through their influence on adaptation behaviors or strategies. For example, excitement is positively associated with IT use through task adaptation: users modify their work practices to maximize benefits from the IT event. Overall, four different strategies, associated with the four different classes of emotions, have been postulated: *benefits maximizing* in response to challenge emotions, *benefits satisficing* in response to achievement emotions, *disturbance handling* in response to deterrence emotions, and *self-preservation* in response to loss emotions (Beaudry and Pinsonneault 2005). While this categorization helps in understanding the links between *uniform* emotions and IT use, what kind of strategies users employ when faced with *mixed* emotions is left unexplored. Research on emotional ambivalence suggests a number of potential strategies: (1) users adopting a *positive or negative approach response* emphasize either only positive or negative aspects of the complex stimulus, and approach the source of ambivalence through compliance or through sabotage, aggression, and derogatory humor; (2) users adopting a *negative avoidance response* emphasize negative aspects of the complex stimulus, but detach themselves from the source of ambivalence; (3) a *vacillation* strategy between negative and positive, as well as between approach and avoidance responses is also possible. In this case, users vacillate between different emphases and behaviors, which can help them in accommodating the ambivalence (Ashforth et al. 2014; Pratt and Doucet 2000).

The negative and positive approach responses and the negative avoidance response can all be considered defense mechanisms: they allow the user either to focus on only the positive or negative aspects of the ambivalent situation, or deny or escape ambivalence. This resolves the ambivalent feelings and alleviates tensions, but without necessarily recognizing their presence, which, in turn, may inhibit learning and problem solving (Ashforth et al. 2014). Conversely, vacillating may enable users to acknowledge the simultaneous existence of both positive and negative emotions toward the stimulus and seek a compromise by partially accommodating both. Compromise may come in two forms: gray or black-and-white (ibid.). In the first case, users can “average or combine the black and white into gray such that a middle ground is found,” while in the second case, “neither orientation is

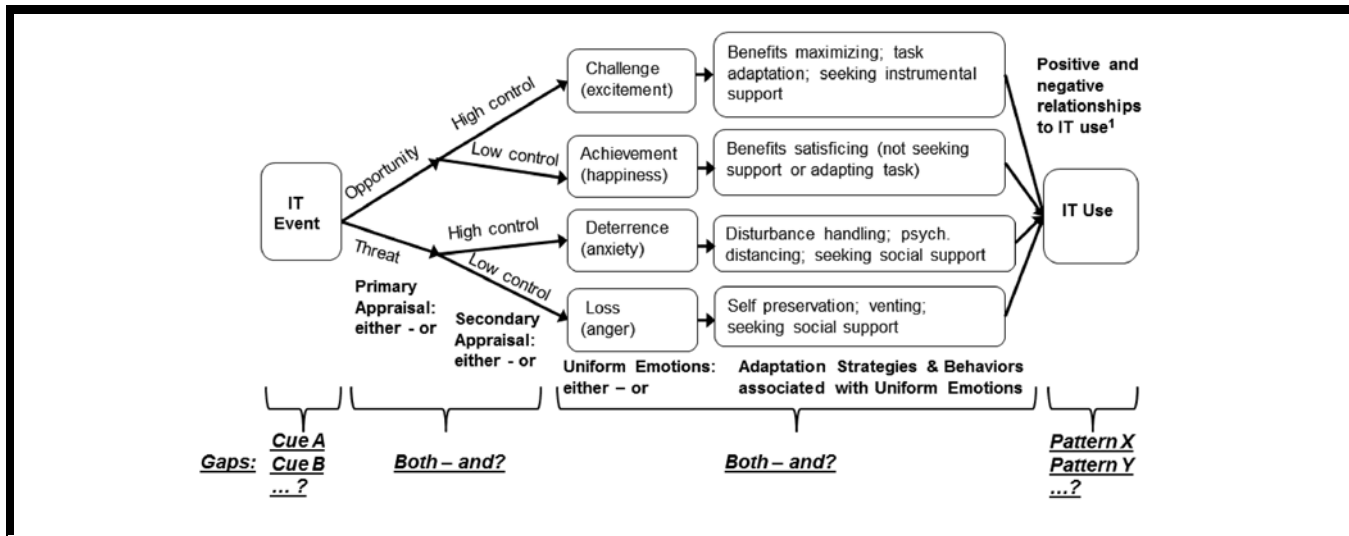
sacrificed, nor are the orientations wholly honored to the point where they are incompatible” (ibid., p. 12). For example, if users feel quite pleased about how a new IT tool has been introduced and communicated to them, but very frustrated with the IT itself, it is possible for them to average this into mild annoyance about the whole situation. Conversely, it is possible for them to respect the core of both aspects in a give-and-take form: users could praise the implementation team, while complaining about the IT. Especially through black-and-white compromise, users can become more aware that they may be in an atypical environment. In this case, ambivalent emotions lead individuals to be more sensitive to unusual associations, thus, potentially increasing their creativity (Fong 2006). A holistic response to ambivalence is also possible (Ashforth et al. 2014), which is in the same spirit as a black-and-white compromise, but denotes full acknowledgment of opposing emotions: a win-win embracing of tensions, rather than a win some–lose some trade-off.

Based on this review of the literature (Table 2; Beaudry and Pinsonneault 2005, 2010), Figure 1 summarizes the *known* links between an IT stimulus event, affective responses, and IT use,<sup>2</sup> and important gaps (italicized and underlined). First, we *zoom in* to the relatively unknown antecedents and outcomes—the IT stimulus event and IT use—by exploring the nature of affective cues and IT use patterns in detail. Second, we *zoom out* and examine how these additional elements link into and extend the existing process-oriented model of Beaudry and Pinsonneault (2005, 2010). Here, we examine how cues elicit mixed and uniform affective responses and how individuals cope with mixed affective responses.

## Research Setting and Method

We chose a multisite field study to investigate the nature and role of emotions in IT use. We looked for a context where users would have considerable discretion over their use patterns and where emotions were likely to be elicited. Moreover, we needed unrestricted access to various stakeholders. These criteria led us to identify two North American universities, a public state institution and a private institution (State and Private), both of which had purchased and implemented

<sup>2</sup>Positive and negative relationships to IT use in Figure 1 is a simplified depiction of the variously signed relationships between adaptation behaviors and IT use as discussed by Beaudry and Pinsonneault (2010). For example, anxiety was shown to have a positive indirect effect on IT use through users seeking social support and a negative indirect effect on IT use through psychological distancing. As Figure 1 is a combination of multiple works, we have not depicted all of the proposed relationships so as to keep the figure simple, while still conveying the gist of the existing process/variance theories.



**Figure 1. Overview of Prior Findings (combining Beaudry and Pinsonneault 2005 and 2010) and Identified Gaps**

the same software package, Faculty Productivity (FP),<sup>3</sup> with a view to improving the efficiency of faculty productivity assessment, accreditation submissions, and other administrative functions. While FP was officially recognized in both cases as the system of record, the university context, with its powerful faculty user base, provides an opportunity to explore *how* users comply with such requirements and, more importantly, how this is tied to emotions. Since FP was also linked to performance evaluations, we deemed it likely to elicit various affective responses, providing a solid base for investigating our two research questions.

Both universities can be divided into areas of arts and sciences (A&S) and professional schools (PS). FP offers a means of capturing and managing faculty activities. The FP vendor first offered the package in 1999. At the time of data collection, there were about 3,000 adopters in more than 25 countries. At its core, FP is a database that, in order to accommodate the capture of activities across academic disciplines, is based on broad classifications of faculty activities (see Appendix C). Each individual activity (e.g., research output, teaching, and service) needs to be manually entered into FP by either copy-pasting it from a CV or typing it in. There are no formatting or spell-checking options in FP. Once data have been entered, FP also provides reporting functionality. Typically, faculty members can pull out a standardized vita and annual activity report (in PDF or MS Word format), while administrators can also run aggregate reports.

<sup>3</sup>FP is a name we have given to the package to ensure confidentiality of the software vendor.

**Sites: State and Private**

State is a public university comprising three colleges and four schools, employing approximately 1,500 faculty members (900 full-time), and enrolling about 40,000 students. In the past six years, State has hired a new President and two new Provosts. The President and former Provost had a long-term goal to implement a performance-based budgeting (PBB) approach and to report, at the institutional level, what members of faculty were doing in the community. The decision to purchase FP was driven mainly by the need for a central faculty vitae database as a prerequisite to achieving this organizational intent. FP replaced a simple, homegrown web form that had been used for gathering faculty activity information. Introduced in 2009 as a vitae database, faculty members were asked to enter their entire vita into the system. In hindsight, the former Provost considered this to have been a mistake, as faculty members were overwhelmed with how much time and effort it took to manually reenter all their CV data into FP. In light of this, in 2011, faculty members were requested to enter only the most recent academic year’s activities into FP. Nonetheless, FP was considered unhelpful for generating vitae and many members of faculty did not comply with requests to enter their data. At the time of writing, State has chosen not to renew its contract for FP and the project is remembered as a waste of time, money, and social capital.

Private is a private university emphasizing business education but also offering programs in the arts and sciences. It has approximately 5,500 students and 280 full-time members of faculty. Private’s decision to purchase FP was made by a

special committee, comprising administrators, faculty representatives, and technology support personnel. FP replaced a homegrown database that had become difficult to maintain. The perceived need for a new system was mainly related to more efficient accreditation reporting. FP has been used (initially voluntarily) since 2010 when it was rolled out as a pilot. A campus-wide e-mail from the Provost delineated the new system's advantages, including the ability to maintain an attractive profile webpage, and produce annual activity reports. Most data in the old system were migrated into FP automatically. In 2011, following software improvements, all faculty were asked to prepare their annual reports in FP. Reactions to FP differed: some faculty members thought it took longer to prepare for the annual review process than previously; others viewed the web profiles generated from FP positively in terms of representing their activities externally. At the time of writing, FP continues to be the system of record and is also being used for an upcoming reaccreditation visit.

### Data Collection

We conducted 47 semi-structured interviews across the two research settings (Table 3) with a wide range of stakeholders, including eight follow-up interviews. Faculty members constituted the main end users of FP, and we included representatives from different disciplines, both tenured and tenure-track, as well as some department chairs. We also interviewed administrators and the staff responsible for implementing FP. All interviews were tape recorded and transcribed. Additional data in the form of meeting recordings, university-wide memos, e-mails, and informal conversations were collected and examined, including over 17.5 hours of observational (video) data: fly-on-the-wall documentation of faculty using FP to complete annual activity reports. This allowed us to complement interview data containing recollections of FP use with observations of use unfolding in front of us. At State, we observed faculty advisory group sessions that discussed issues around FP and its use.

### Data Analysis

We describe our data analysis in two parts. First, we discuss how data were coded and individual affective and behavioral responses aggregated. Then we consider the analysis in terms of developing a comprehensive framework linking cues, emotions, and IT use patterns (Figure 2). We began by zooming into individual affective responses, to examine which particular *affective cues* elicited these responses, and into individual IT use behaviors, to explore particular *patterns* the users enact. Thus, our unit of analysis is, broadly, individual

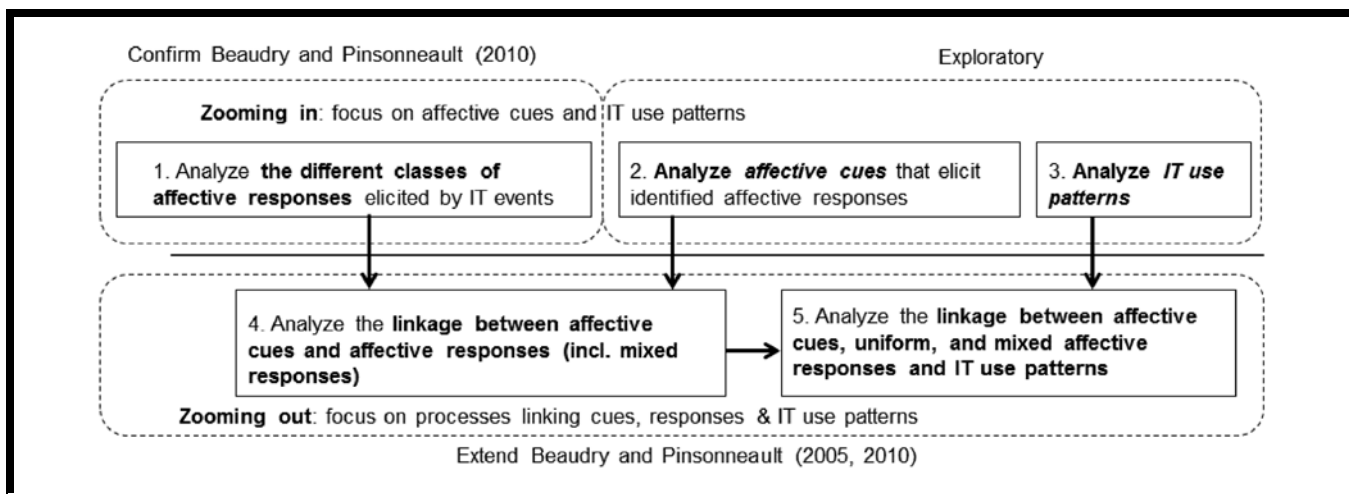
reactions (affective and behavioral) to new IT. Our foundation was Beaudry and Pinsonneault's (2010) study that grouped the types of affective responses that IT events elicit into four classes: achievement, loss, challenge, and deterrence. Our analysis confirms this classification but also suggests the presence of mixed or ambivalent affective responses (step 1). We then explored the affective cues that elicited both uniform and mixed responses (step 2), and what kind of use patterns (step 3) individual users enacted. While there is some prior research suggesting the types of cues (e.g., Rafaeli and Vilnai-Yavetz 2004; Weiss and Corpanzano 1996) and use patterns (Saeed and Abdinnour 2013) that one might expect to find, this part of the analysis was largely data-driven.

This focused exploration of affective cues and IT use patterns was followed by a consideration of how the resultant new understanding links into, and extends, Beaudry and Pinsonneault's (2005, 2010) process-oriented model (Figure 1). In order to do this, we zoomed out and looked at sequences of events linking various affective cues of the IT stimulus, affective responses, and IT use patterns (steps 4 and 5). This allowed us to verify and extend the existing model. Our overall approach is, thus, best characterized as intermediate theory research (Edmondson and McManus 2007). We draw extensively on prior work on emotions in IT use (Beaudry and Pinsonneault 2010) and a coping model of user adaptation (Beaudry and Pinsonneault 2005), both confirming and extending this process- and variance-oriented research.

### Coding and Aggregating Data

We followed qualitative data coding procedures (Miles and Huberman 1994; Myers 2009) using a web-based tool (Dedoose) for coding. The data-driven approach enabled us to describe and develop our two main categories (affective cues and IT use patterns) and by exploring variations in these, to uncover how these categories link to other elements and processes of interest. We illustrate the processes of abstraction toward these main categories in Appendix A (Tables A1 and A2). We began our analysis by assuming that IT events elicit four classes of emotion (Beaudry and Pinsonneault 2010). To assess this empirically, we identified the presence of affective responses in our data. We looked for how the study participants described situations in emotional terms (e.g., pleased; angry; worried) and the way they "talked to" or about the system while using it or discussing it in meetings. We compared and contrasted affective responses evident in our data in order to group experiences into an *affect category* (Scherer 2005, pp. 714-715). For example, experiences described as "nice" and "good" were grouped into the *satisfaction* category (achievement class) (Appendix D).

<b>Methods</b>	<b>State</b>	<b>Private</b>
Field work	Interviews and observations over 18 months	Interviews and observations over 12 months
Timing	Implementation and post-implementation	Same
IT systems in use (relevant for study)	Packaged software system for faculty CV management/productivity evaluations (FP); MS Office software; MS Outlook.	Same
Narrative interviews	29 interviews with 23 stakeholders: 4 with 3 implementation team members; 8 with 7 administrators; 17 with 13 faculty members. In total, approx. 25 hours of audio data.	18 interviews with 30 stakeholders: 4 with 3 implementation team members; 6 with 6 administrators/chairs (+ 1 meeting recording with 21 administrators/chairs present); 7 with 7 faculty members. In total, approximately 20 hours of audio data.
Observations	2 faculty advisory group sessions + limited observations of faculty use during interviews. In total, approximately 7.5 hours of observations.	4 sessions with faculty filling out their annual reports + limited observations of faculty use during interviews. In total, approximately 10 hours of observations.
Documentation	E-mails; help documentation; aggregated system use reports	Same



**Figure 2. Overview of Data Analysis Steps**

Next, we analyzed the various reasons given for affective responses in descriptions of past experiences, or noticed different events preceding a particular affective response during observation. We used descriptive coding (Myers 2009) to compare and contrast similar and different events, interactions and reflections evident in our data, and to group similar elements into a type of cue (see Table A1, Appendix A). We then used interpretive coding (ibid.) to further group these descriptive codes, alternating between insights from prior research (Boudens 2005; Rafaeli and Vilnai-Yavetz 2004; Weiss and Corpanzano 1996) and the specifics of our data. We found evidence of instrumental, symbolic, identity work-, interaction-, and change-related cues.

To describe the content of particular use patterns present in our data, we looked for (descriptions of) specific ways individuals used (and did not use) FP. We focused on three criteria to discern use patterns (Burton-Jones and Gallivan 2007): system-centered (different sets of features used and not used), user-centered (different sets of cognitions and affect with which the users engage the system), and task-centered (different sets of tasks for which the system is employed). We used descriptive coding (Myers 2009) to compare similar and different descriptions of use, and to group similar sets of interactions, affects/cognitions, and tasks into categories (see Table A2, Appendix A). Whenever possible, we identified the temporal and logical sequence of actions

that make up a distinct use/nonuse category. In doing so, we aggregated data across multiple individuals (Pentland and Feldman 2007). We then applied interpretive coding (Myers 2009) to further group conceptually similar sequences. This process resulted in the identification of five distinct use patterns: *personalization*, *gaming the system*, *being a good citizen*, *exercising discretion*, and *opting out*. Below, we present the typical tasks, sequence of actions, and affect characteristic for each use pattern as a narrative network: “a set of stories (performances) that have been, or could be, generated by combining and recombining fragments of technology in use” (Pentland and Feldman 2007, p. 781). A narrative network is based on aggregated data, but it presents the generalized sequence of actions in first person, because it depicts a *typical* use pattern for all the individual actors upon whose stories it is based.

### Developing a Comprehensive Framework

To zoom out and describe the relationship between the identified cues, affective responses, and emerging use patterns, we alternated between the process model adapted from Beaudry and Pinsonneault (2005, 2010) (Figure 1) and the sequences of events observable in our data. In order to do so, we analyzed IT use situations holistically (per individual) and then across individuals to identify the (1) affective cues present, (2) affective responses present, and (3) use patterns present. The *linkages* between cues, affective responses, and use patterns (and the supporting evidence) are detailed in our findings.

## Findings

### Uniform and Mixed Affective Responses to IT

Our findings largely confirm that affective responses elicited by an IT stimulus event can be categorized into four broad classes (Figure 3) depending on how the IT event is appraised (Beaudry and Pinsonneault 2010). Loss emotions (anger, frustration) were evident when the IT stimulus event was appraised as a threat and the users perceive a lack of control over the expected consequences. Achievement emotions (satisfaction, pleasure) were evident when the IT stimulus event was appraised as an opportunity and the users perceive a lack of control over the expected consequences. For example, users “loved the idea of rolling up data” in FP, despite their lack of control over who might see and manipulate the data entered into FP. Deterrence emotions (worry, fear) were evident when the IT stimulus event was appraised as a threat and users perceive some control over the expected consequences. For example, faculty members feel concerned

or worried about what will happen to the data entered into FP, but also perceive that they retain some control over the quality and quantity of data they input. Notably, there was a lack of challenge emotions evident in our data. The *potential* for excitement is mentioned in a setting of user control and where FP would be appraised as an opportunity (e.g., using FP data for easier accreditation reporting). However, this appraisal would only be possible when accreditation was imminent *and* if FP data were adequately maintained. Either one or both of these conditions were not fulfilled at Private or State during our study.

While we have presented uniform affective responses in Figure 3, our data also revealed situations where individuals responded with an ambivalent affective response (i.e., two or more emotions from *different classes* were associated with FP at the same time). For example, we noticed a mix of satisfaction and frustration (achievement and loss), but also satisfaction and concern (achievement and deterrence):

*I can still see there's an excess of data fields....I'm pleased with how it worked out, but I can see if someone published six or seven articles a year this [a few too many fields] might be frustrating.* (Faculty member, tenured, A&S, Private)

*Having all of the “facts” coming out of [FP] I think is wonderful....But then having [the FP data] used second-hand without knowing who is using it, maybe a little bit uncomfortable.* (Department chair, tenured, PS, Private)

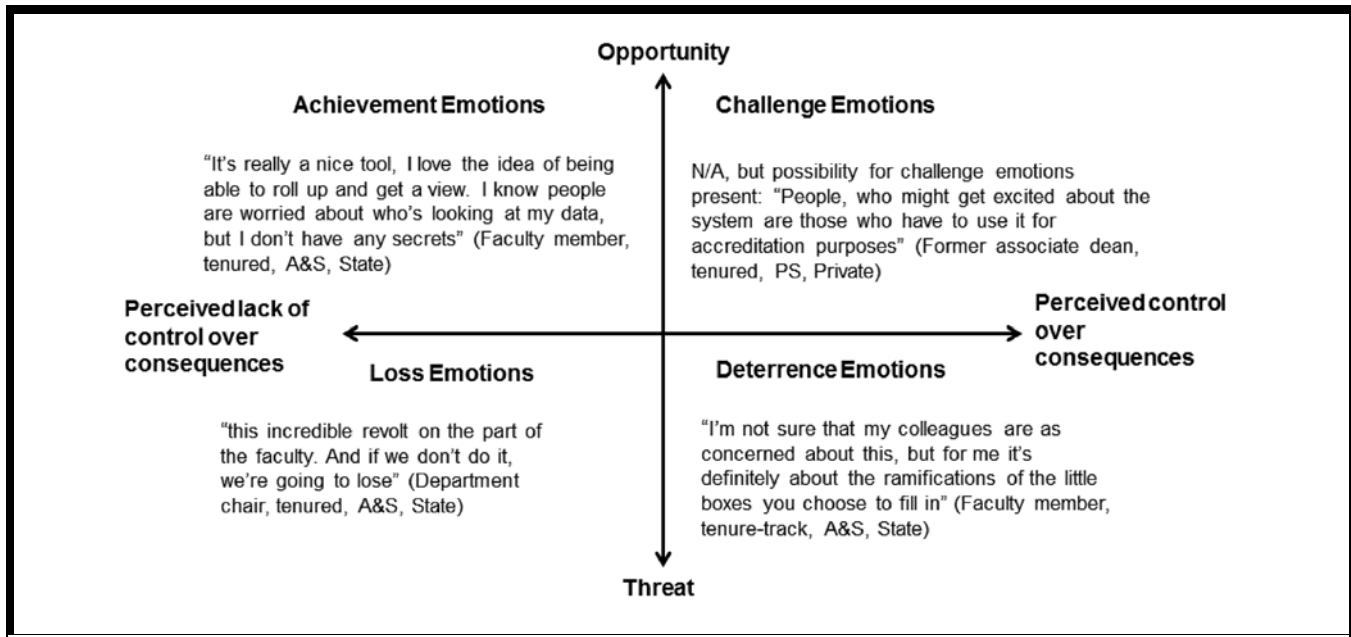
In order to understand how these mixed affective responses arise, it was necessary to unpack the IT stimulus event—to examine which *cues* elicit a particular affective response and whether interactions between these cues could explain the presence of ambivalent affective responses.

### Cues of the IT Stimulus Event

We identified five different types of affective characteristics (cues) of the IT stimulus event that users responded to emotionally: *IT instrumentality*, *interactions with others*, *involvement in change*, *identity work*, and *IT symbolism*.

**IT Instrumentality:** Functionality and usable design of FP were characteristics we found to be regularly associated with affective responses. This *IT instrumentality* cue was apparent when the user perceived FP as helping or hindering the completion of an activity, often in comparison with previous systems used to complete the same task. *Loss* and/or *achievement* emotions (e.g., satisfaction and frustration) are prevalent





**Figure 3. Examples of Affective Responses to FP as the Stimulus Event (adapted from Beaudry and Pinsonneault 2010)**

in response to this cue, suggesting that instrumentality is perceived by end-users as something over which they have little control, and is appraised, respectively, either as an opportunity or a threat.

*It [FP] does help keep your activities organized. Plus they have some nice features—like this—“to present.” A lot of the service stuff continues year after year, so you don’t have to retype it, just put “to present” (no end date) and it’s done.* (Tenured faculty member, PS, Private)

*Scientists are frustrated, because everything is available in sort of [EndNote, MEDLINE], right? It [FP] seems very generically written to try to appeal to everyone, but it just p\*\*\*\*s off most people.* (Vice Provost, former department chair, A&S, State)

It is possible for the same user to perceive IT instrumentality as a threat and an opportunity simultaneously, leading to a mixed affective response. This happens, for example, when some aspects of the new IT functionality appear to afford new opportunities while other aspects appear to constrain their ability to perform work tasks.

**Interactions with Others:** User interactions with stakeholders in the FP project also provoked emotions. Various

forms of communication create the background of second-hand experiences with IT so that individuals respond to the IT stimulus event based on what they have heard others say about the technology, in particular, the administrative sponsors and the IT project team. **Loss** and/or **achievement** emotions are prevalent in response to this cue.

*They’re not doing a good job of communicating the value of [using FP]. You don’t get punished; you don’t get rewarded. Why should we do this?* (Department chair, PS, State)

*I think they did a good job of saying that this [FP] is a next integration of something we need.* (Former department chair, A&S, Private)

This suggests that as a cue, interactions with others about IT, can signal either that the new system is a threat or an opportunity, over which users have little control. As with IT instrumentality, the same user may have both positive and negative interactions. A department chair at Private, for example, comments on positive interactions with the implementers of FP, while hinting at less positive interactions with higher administration.

*X [person in the implementation office] was extremely receptive and cooperative and I found him always to be responsive....[but] I think in an atmo-*

*sphere of trust there would probably be a lot less second guessing about this mass use of “identities.”*

**Involvement in Change:** Our data revealed that some users responded emotionally based on their personal experiences of being involved (or not) in the IT project. **Deterrence** or **achievement** emotions are prevalent in response to this *involvement in change* cue.

*I think they passed up some feedback, but nothing [happened]....And nobody is talking about departmental differences and what the categories in [FP] should be, which is why there are some concerns as to where [FP] will lead. (Department chair, A&S, State)*

*I'm very gratified with the results; I was glad I was part of it. The [implementation] staff was super-responsive about everything. (Tenured faculty member, A&S, Private)*

As expected, we did not find cases where users had both responses simultaneously, as it is unlikely that the same user would be concurrently involved/not involved in the project. The prevalent affective responses suggest that involvement in the implementation of new IT may signal either that the new system is a threat over which users *could* have control (but are not being allowed to exercise this control), leading to *deterrence* emotions, or that the new system is an opportunity, leading to *achievement* emotions. We suggest that positive emotions in this case are in the *achievement* class (not *challenge* class), because end users, despite being involved and seeing the new IT as an opportunity, seem to appraise their level of control to be minimal as the decision as to whether FP would be implemented was not at their discretion.

**IT Symbolism:** This refers to the various ideas and messages that using the IT artifact for a particular purpose brings up. At both State and Private, there were various symbolic associations elicited by FP, including associations of **surveillance**

*It's another step in a culture of monitoring us. And if it's not [FP], it's some other thing that's gonna make us all angry. What we object to is the culture at this point...the software just makes it visible. (Department chair, PS, State)*

and **standardization**

*Everyone's frustration is—those numbers are meaningless, so, are no numbers better than really bad numbers?....Now [FP] forces the standardization,*

*rather than the Provost being the “bad guy”.*  
(Department chair, A&S, State)

In our settings, **loss** emotions were prevalent in response to this cue. This suggests that the symbolic associations around FP were largely negative in content, tending to cue appraisals of the new IT as a threat and the perception that users can do little to influence the consequences.

**Identity Work:** As a cue this refers to the ways in which the individual using the IT associated it with particular aspects of their own status, power and performance. In response to this cue, **deterrence** emotions were prevalent.

*It does feel sort of yucky when you have a lot of blank categories, because you feel like you have failed to achieve....Please do this form, so we can take away more money from you. No wonder people are suspicious of [FP]. (Tenure-track faculty member, A&S, State)*

*Being a faculty member—you develop your own unique ways of making yourself look good. And this [FP] is trying to frame it all into an assembly line. So I think that's some of the distrust... (Tenured faculty member, A&S, State)*

Thus, self-reflections arising around the new technology tend to cue appraisals of FP as a threat over which users do have some control. This confirms prior research that suggests that identity work is especially emotional when there is a perceived threat to one's identity (Kiefer and Müller 2003). Table 4 summarizes each cue and the different emotion classes elicited.

Turning to our first research question, our findings show that individuals respond emotionally to a *confluence of cues* salient in an IT stimulus event. Specifically, we identified *five different types of cues of the stimulus* that are linked with different affective responses. However, as Beaudry and Pinsonneault (2010) imply and as our findings substantiate, the same IT event, and even the same cue, may be appraised as being both a threat and an opportunity, both controllable and not, thus eliciting ambivalent affective responses. First, it is possible for the same cue to hold both positive and negative content (e.g., simultaneous consideration of constraining and enabling IT functions). Second, when appraising an IT event as a whole, users typically respond to a *confluence of cues*, the mixed affective response here may be the result of a positive response to one cue and a negative response to another. To account for this indeterminate influence of a particular cue, and the influence that a *confluence of cues* has, we next propose important extensions to the existing process model.

**Table 4. Cues and Corresponding Affective Responses**

Cue	Definition	Positive Affective Response	Negative Affective Response	Mixed Affective Response
IT instrumentality	Functional and design features of IT that the user perceives allow or do not allow him/her to perform work tasks.	Achievement when FP affords new opportunities, easier task achievement.	Loss when FP constrains, hinders, slows down work activities.	Both when some aspects of FP appear to afford new opportunities, while others appear to constrain the ability to perform work tasks.
IT symbolism	Characteristics of IT that the user associates with broader ideas and that take on various connotations.	None evident in our data.	Loss when FP associated with ideas with negative connotations.	Possible, but none evident in our data.
Identity work	Characteristics of the IT/IT event that the user perceives communicate something about his/her status and performance.	None evident in our data.	Deterrence when user cannot make him/herself "look" the way they want to using FP.	Possible, but none evident in our data.
Interactions with others	What others, with whom a user interacts, say about the IT/IT event (purpose, how easy it is to use and how useful it is) and <i>how</i> they say it.	Achievement when others talk about FP positively and foster positive relationships with the user (trust).	Loss when others bemoan FP; or when interactions themselves are perceived as insufficient or unreliable.	Both when some interactions about FP are positive and others negative (or insufficient).
Involvement in change	Level of user involvement in the new IT change project.	Achievement when actually involved in the change to FP (more than nominally).	Deterrence when user reflects on his/her lack of involvement, inability to impact decisions.	Unlikely as simultaneous involvement and non-involvement is not common.

### IT Use Patterns

We found five distinct patterns of use in our settings: *exercising discretion*, *being a good citizen*, *gaming the system*, *personalizing*, and *opting out*. Three of these patterns were observed in both research settings. Table 5 gives an overview of the use patterns using the task-, system-, and user-centered dimensions (Burton-Jones and Gallivan 2007).<sup>4</sup> At State and Private, FP was used mainly for annual report related or CV maintenance activities, which can broadly be split into three tasks: inputting data into, generating and finalizing, and submitting the report/CV. While Table 5 offers a description of the use patterns found, how these patterns are influenced by cues and affective responses remains an open question to which we turn next.

### Linking Cues, Affective Responses, and IT Use Patterns

An individual user typically has a set of particular affective responses that are elicited by a *confluence of affective cues* of the IT stimulus event. The five different cues may interact in

a *reinforcing* manner, thereby eliciting the same class of emotions (uniform response), or they may interact in an *oppositional* manner, eliciting different classes of emotions (mixed response). We find that users have different coping behaviors to deal with these affective responses (see Beaudry and Pinsonneault 2005, 2010; Pratt and Doucet 2000), leading to different use patterns.

### Coping with Uniform Affective Responses

Users cope with uniform affective responses through *pure* adaptation strategies (Beaudry and Pinsonneault 2005, 2010). The use patterns of *being a good citizen*, *gaming the system*, and *opting out* emerge from these pure adaptation strategies. Given the confirmatory nature of our findings here, we only present short summaries with chains of evidence in Appendix B.

The use pattern of *being a good citizen* was observed only at Private. We find that it emerges as a result of the reinforcing interactions between *IT instrumentality* and *interactions with others* cues. The generally positive response to instrumental affordances interacts with positive responses to communication between project sponsors and faculty members. As a result, positive experiences are reinforced, creating a uniform

<sup>4</sup>Quotes illustrating the use patterns are given in Appendix A, Table A2.

**Table 5. Overview of Use Patterns at State and Private**

<b><i>Being a good citizen</i></b> (use FP as intended, fill in all requested data, use FP version for subsequent purposes) (Only Private)	<b><i>Gaming the system</i></b> (only fill in the data in FP that matters for performance evaluations) (State and Private)	<b><i>Opting out</i></b> (FP is not used at all) (Only State)	<b><i>Exercising discretion</i></b> (use FP as intended, but tweak it to fit your needs) (State and Private)	<b><i>Personalizing</i></b> (use data in FP to generate an annual report/CV, then edit it in MS Word and use the MS Word version for subsequent purposes) (State and Private)
<u>Task-centered</u> : fill out annual report/CV in FP, check the report in Word, submit it in FP	<u>Task-centered</u> : fill out annual report/CV in FP, check the report in Word; submit it in Word	<u>Task-centered</u> : fill out annual report /CV, check and submit it using Word	<u>Task-centered</u> : fill out annual report/CV in FP; check the report in Word; submit in either FP or as a Word file	<u>Task-centered</u> : fill out annual report/ CV in FP, check the report in Word; submit in Word
<u>System-centered</u> : A1. I log into FP A2. I read the instructions for filling out the annual report (MS Outlook) A3. I look over last year's report A4. I go through each section of the annual report and enter most of the requested data (e.g., abstracts for publications) A5. I am done with all sections A6. I generate the report in MS Word and check the report for accuracy A7. I go back to edit the report in FP A8. When satisfied, I certify my report is complete in FP and submit it through FP	<u>System-centered</u> : B1. I log into FP B2. I go through those sections of the annual report/CV that will make me look good for the administration (e.g., I do not enter professional memberships or community service; I do not enter other things normally found on a CV; I enter journal articles and other scholarly activities) B3. I decide that it is enough (go to E2-E4)	<u>System-centered</u> : C1. I maintain my CV/do my annual report using MS Word, End-Note, or some other tool	<u>System-centered</u> : D1. I log into FP D2. I go through each section of the annual report/CV and enter data selectively according to what is important to me and to the university from my perspective (e.g., I do not fill out departmental service; I do enter scholarship and professional service. I do not enter abstracts for publications.) D3. I am done with all sections (go to E2-E4 or A6-A8)	<u>System-centered</u> : E1. I enter all of my data into FP (cf. D1-D3; A1-A5) E2. I generate an MS Word format annual report/CV in FP E3. I edit the report/CV in MS Word E4. I submit the MS Word report to my chair/dean via e-mail/I use the MS Word CV on all occasions where my CV is needed
<u>User-centered</u> : Neutral interest/disinterest, conscientiousness	<u>User-centered</u> : Cynicism and anxiety	<u>User-centered</u> : Resentful disengagement	<u>User-centered</u> : Engaged interest mixed with some frustration	<u>User-centered</u> : Engaged interest mixed with concern

affective response of satisfaction (achievement). This is met with the general strategy of benefits satisficing: already satisfied users have little motivation to adapt (the task, technology, or themselves) and settle for the prescribed way of doing things. This results in a use pattern where faculty users, while putting considerable effort into their activities with FP, also show little initiative in learning new features, improving the technology, or experimenting with tasks (Table B1).

The *gaming the system* use pattern emerges as a result of reinforcing interplays between the *identity work* and *involvement in change* cues. Emotions of anxiety and fear related to FP not supporting faculty expressions of distinctiveness are reinforced by concerns around lack of user involvement in FP design. This confluence of cues and the uniform affective

response (deterrence) are met with a strategy of disturbance handling, with behaviors of psychological distancing and task adaptation, oriented toward reducing anxiety. This results in a use pattern of minimal, but strategic, effort when inputting data into FP (Table B2). When individuals are not given the chance to be involved in a potentially threatening IT effort that has a direct influence on something as important as their performance evaluation, they find a way to control the consequences of that effort and beat the administration at their own game (e.g., inputting data used for evaluations, but purposefully neglecting to input other potentially useful data).

The use pattern of *opting out* of FP use for any activity emerged only at State as a result of a reinforcing confluence of the symbolic and interaction cues. Stronger emotions of

**Table 6. Exercising Discretion: Evidence Chain for Use Pattern Emergence**

	Cues	Appraisal	Affective Responses	Adaptation Behaviors	IT Use Pattern
2 tenured professors, 1 department chair (A&S, State; A&S, Private; A&S, Private)	<b>IT instrumentality</b>	<p>"I can still see there's an excess of data fields, but if you're selective about the ones you use, then you don't have to invest a lot of time in it....I think [FP] works to the benefit of individual faculty. People realized that it made their lives easier"</p> <p><b>Both-and:</b> FP seen as both an opportunity and a potential threat; low control)</p>	<p><b>Mixed:</b> achievement and loss</p> <p>"I'm <b>pleased</b> with how it worked out. If someone published six or seven articles a year this (a few too many fields) might be <b>frustrating</b>"</p>	<p><b>Mixed:</b> Vacillating between negative-approach and positive-approach strategy</p> <p><b>Some venting</b> (self-preservation), but also <b>task and tool adaptation</b> as well as <b>seeking instrumental support</b> (benefits maximizing)</p>	<p><b>Exercising Discretion</b></p> <ol style="list-style-type: none"> <li>1. I log into FP</li> <li>2. I go through each section of the annual report/CV and enter data selectively according to what is important to me and to the university</li> <li>3. I am done with all sections</li> </ol>

anger and resentment related to negative symbolic associations (e.g., FP used for surveillance) are reinforced by less intense dissatisfaction with a lack of communication between project sponsors and faculty members (e.g., about the importance and value of FP). These uniformly negative loss emotions are handled with the general strategy of self preservation, specifically with behaviors of avoidance, reflected in a pattern of nonuse: *opting out* (Table B3).

### Coping with Mixed Affective Responses

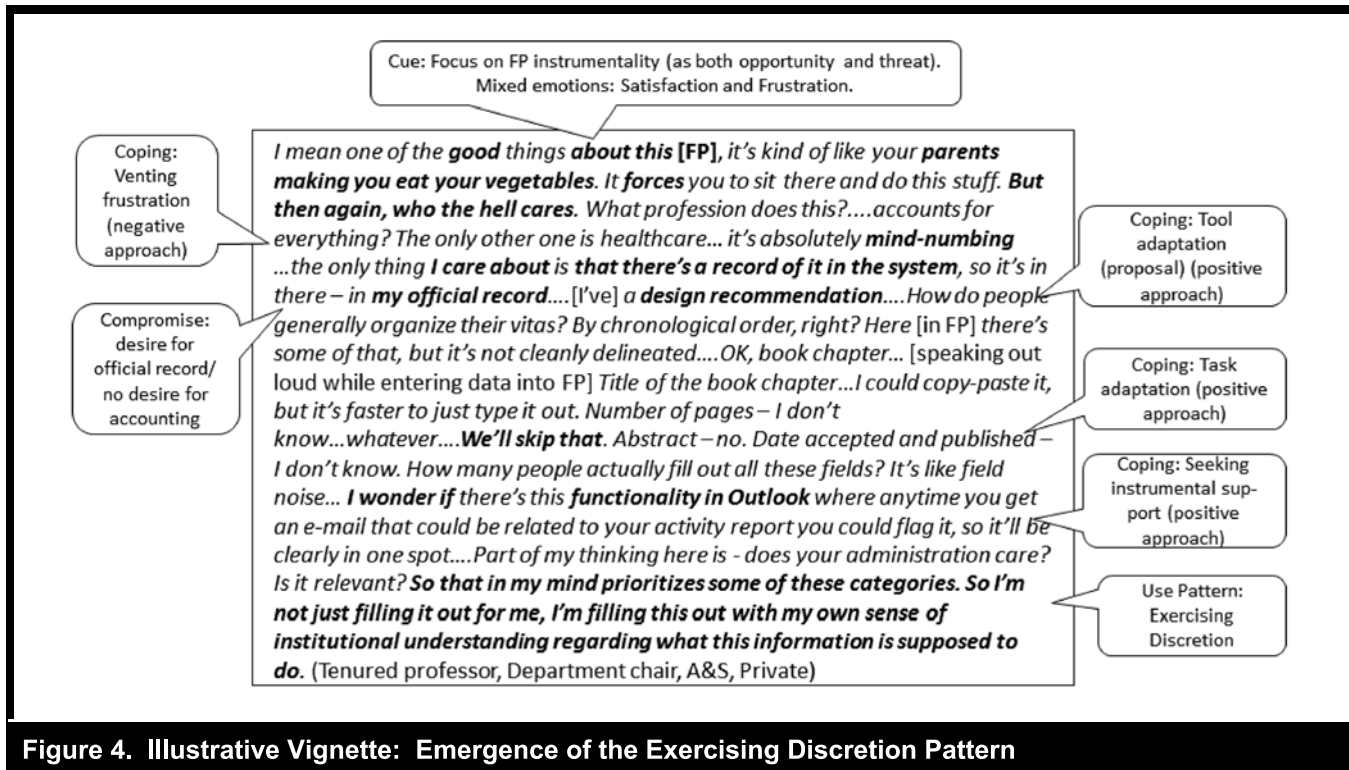
Users cope with mixed or ambivalent affective responses through *not* one clear adaptation strategy; rather, users *combine* various adaptation behaviors that are often associated with different strategies. The use patterns of *exercising discretion* and *personalizing* emerge from these *impure* adaptation strategies. Our findings extend the model proposed by Beaudry and Pinsonneault (2005, 2010) that only deals with uniform emotions and pure adaptation strategies. Accordingly, we discuss illustrative individual cases that demonstrate the emergence of these impure strategies before presenting cross-individual evidence chains in tables.

The *exercising discretion* use pattern (Table 6) emerges as a result of the instrumental cue alone. Users appraise the balance between instrumental constraints and affordances (Leonardi 2009) and respond with a mixture of satisfaction and frustration. Following Beaudry and Pinsonneault, we would expect users to respond with benefits satisficing to achievement emotions and with self-preservation to loss emotions. However, what we find is a combination of specific adaptation behaviors, including venting, task and tool adaptation, and seeking instrumental support (as exemplified in the

narrative presented in Figure 4). While venting is associated with the self-preservation strategy, the latter three are associated with the benefits maximization strategy rather than benefits satisficing (ibid.). The user's narrative shows, first, the prevalence of the IT instrumentality cue: the individual is oriented toward what FP allows and does not allow him to do and he sees FP both as a threat and an opportunity (eliciting an ambivalent response he describes "like your parents making you eat your vegetables"). In coping with this ambivalence, the user is actively experimenting with tasks (skipping entering certain data) and the tool (design recommendations; seeking instrumental support from a different system such as MS Outlook). However, the user is also venting, expressing frustration about the mind-numbing necessity to "account for everything."

Attributing the combination of these behaviors to an overall strategy, we build on the idea of *vacillation* (Pratt and Doucet 2000). Users waver between emphasizing the positive and negative aspects of the complex stimulus (FP instrumentality), but within the approach response. Users approach the instrumental opportunities and constraints as a trade-off or a black-and-white compromise (Ashforth et al. 2014; Pratt and Doucet 2000). In order to have an official record in FP, users have little choice but to use it. Frustration with the system can lead them to vent, but not to *avoidance*; rather, venting can be cathartic and can be accompanied by creative task and tool adaptations (see Fong 2006). Through vacillation, faculty members develop the overall use pattern of making FP work for them by exercising discretion (Table 6).

The *personalizing* use pattern emerges as a result of *identity work* and *IT instrumentality* cues interacting. First, FP's inability to represent what individual faculty members viewed



**Figure 4. Illustrative Vignette: Emergence of the Exercising Discretion Pattern**

as their particular distinctiveness leads to emotions of discomfort and anxiety. These emotions are confronted with a positive instrumental factor: being able to generate an editable MS Word annual report or a CV from FP. From prior research, we would expect users to respond with benefits satisficing to achievement emotions, and with disturbance handling to deterrence emotions (Beaudry and Pinsonneault 2005, 2010). However, what we find is a combination of seeking social support and tool adaptation (as exemplified in the narrative presented in Figure 5).

While seeking social support is associated with disturbance handling (and self preservation) strategies, tool adaptation is associated with the benefits maximization strategy (ibid.). The user's narrative demonstrates, first, the oppositional interaction of two cues: the individual is oriented toward how they want to look on their CV and how FP can support or constrain this (i.e., what makes sense in a CV may not be there in FP). The result is that FP is seen as an opportunity and a potential threat that needs to be controlled (eliciting an ambivalent emotion of concern and satisfaction). In dealing with these emotions, the user is appealing to colleagues for sympathy (seeking social support that all want to edit their report) as well as actively adapting the tool (seeking instrumental support from a different system, MS Word). As an overall strategy, we suggest that the users vacillate between

emphasizing the positive and negative aspects of the stimulus within the approach response (Pratt and Doucet 2000). Users are able to compromise between the negative aspect of having to use FP, but having little control over how it represents them, and the positive aspect of being able to control the threat by editing one's report using a different tool. As a result, the users continue to use FP for giving the facts, while these facts are composed into a personal story in MS Word (Table 7).

### **Use Patterns: When Do Users Go Against Organizational Intent?**

To better understand the links between affective responses, adaptation strategies, and use patterns, we abstract away from the five specific use patterns and group them according to the dimensions of support/resistance and conformance/nonconformance to IT terms of use (Bagayogo et al. 2013; van Offenbeek et al. 2013), as shown in Figure 6. *Being a good citizen* is a supportive use pattern that is characterized by a high degree of conformance to IT terms of use. The pattern is somewhat passive as users demonstrate little initiative to enhance the system; rather users are geared towards "doing what they are told." *Gaming the system* and *opting out* are both resistance patterns. *Gaming the system* demonstrates

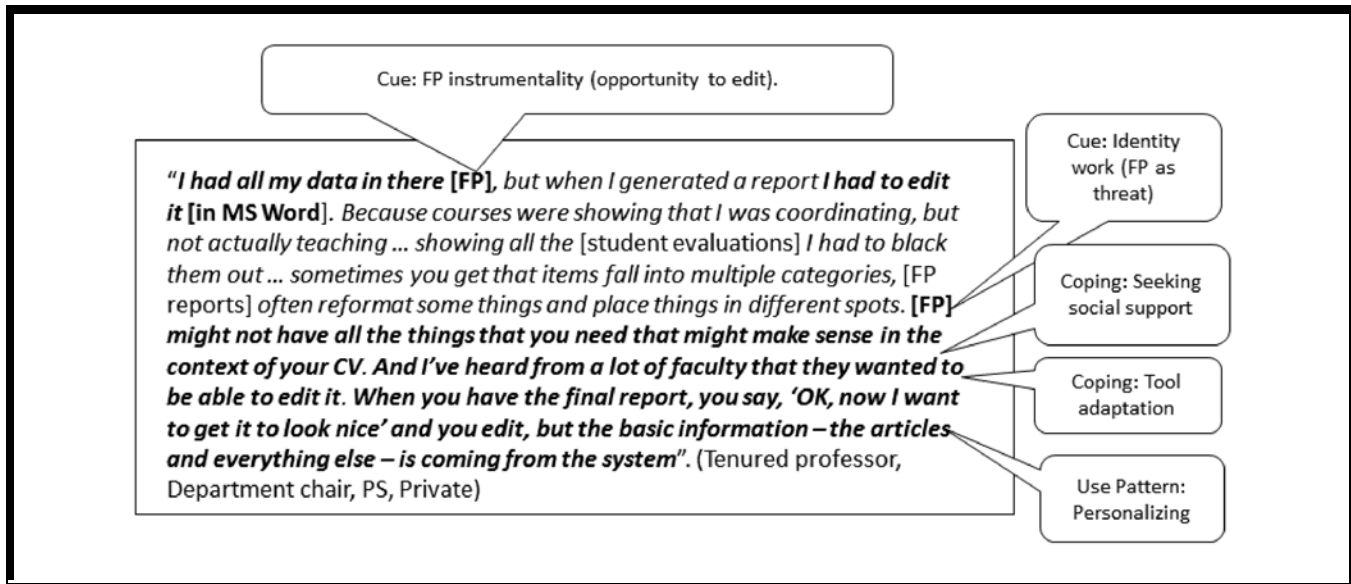
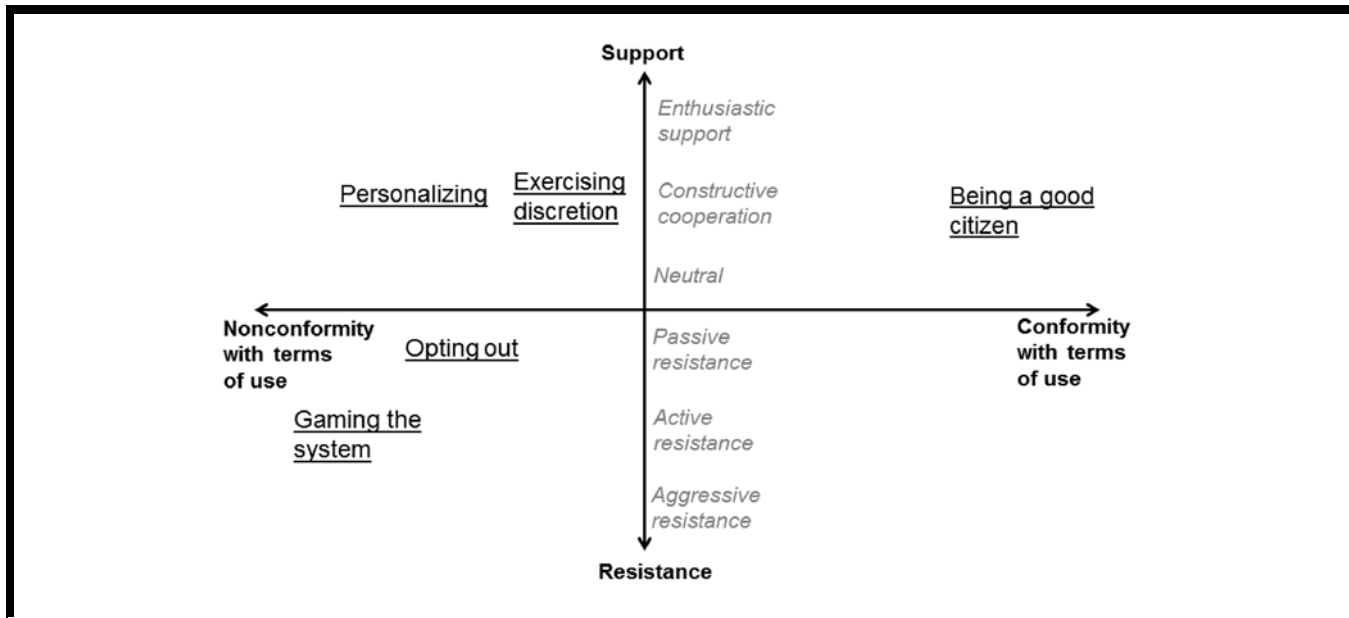


Figure 5. Illustrative Vignette: Emergence of the Personalizing Pattern

Table 7. Personalizing: Evidence Chain for Use Pattern Emergence

	Cues	Appraisal	Affective Responses	Adaptation Behaviors	IT Use Pattern
2 department chairs (PS); Private 1 tenured professor (A&S); State	<b>Identity work</b>	<p><i>"The bottom line is, different faculty like to format things in different ways. Faculty want the documents that they present to be their signature, presentation and everything else."</i></p> <p><b>(Both-and:</b> FP seen as a potential threat; desire for high control; below: FP seen as an opportunity.)</p>	<p><b>Mixed (for IT event as a whole, containing both cues):</b> deterrence and achievement</p> <p><i>"Having [the FP data] used second-hand without knowing who is using it, maybe a little bit uncomfortable."</i></p>	<p><b>Mixed:</b> vacillating between positive-approach and negative-approach strategy.</p> <p><b>Seeking social support; tool adaptation</b> (Re-process FP data in Word.)</p>	<p><b>Personalizing</b></p> <ol style="list-style-type: none"> <li>1. I enter all of my data into FP</li> <li>2. I generate an MS Word format annual report/CV in FP</li> <li>3. I edit the report/CV in MS Word</li> <li>4. I submit the MS Word report to my chair / dean via e-mail / I use the MS Word CV on all occasions</li> </ol>
	<b>IT instrumentality</b>	<p><i>"There's formatting idiosyncrasies that...but I think it [FP] helps everybody understand what the data is that we want to use."</i></p> <p><b>(Both-and:</b> FP seen as an opportunity; <b>above:</b> threat.)</p>	<p><i>"Having all of the 'facts' coming out of FP I think is wonderful."</i></p>	<p><i>"I got no faculty reports that were not re-processed in Word."</i></p>	



**Figure 6. Categorizing Use Patterns in Terms of Support–Resistance and Conformity**

more active resistance geared toward purposeful misuse or deliberate nonconformity with FP's terms of use. *Opting out*, conversely, demonstrates more passive resistance as users' efforts to engage with FP amount to ignoring it. Fear and anger, in short, seem to be strong contributors to users going against organizational intent, often with negative consequences; with both of these use patterns, important data necessary for achieving desired outcomes from FP (e.g., efficient accreditation reporting) are not entered.

*Exercising discretion* and *personalizing* constitute use patterns characterized by support for the new IT, but nonconformance to IT terms of use; in *exercising discretion*, users deviate to a small degree from IT terms of use, while in *personalizing* they deviate quite substantially by replacing FP with MS Word for a key subtask (report formatting and submission). Mixed emotions or ambivalence, thus, also constitute a strong contributor to users going against organizational intent. However, use patterns in the support/nonconformance category may have positive as well as negative organizational effects (e.g., when terms of use do not support organizational goals) (Bagayogo et al. 2013). We return to reflect on this possibility in the discussion section.

In sum, linking the various cues, affective responses, and use patterns reveals the general picture presented in Figure 7. Pure forms of the process, where IT stimulus events are appraised consistently, elicit uniform affective responses, and lead to the adoption of single adaptation strategies, are reflected in the oft-considered use patterns where support

combines with conformance and resistance combines with nonconformance to IT terms of use.

We extend the work of Beaudry and Pinsonneault (2010) by considering impure forms of the process, examples of users exhibiting contradictory (both-and) appraisals of the IT stimulus event, resulting in mixed affective responses. Users vacillate between emphasizing positive and negative aspects of the stimulus and try to cope with the ambivalence through compromise (e.g., behaving as if the positive and negative aspects form a trade-off). Compromise becomes reflected in supportive use patterns characterized by *nonconformance*.

Having presented our findings, we now consider their theoretical and practical implications.

### **Discussion: Importance of Cues, Why Users Vacillate and Benefits of Nonconformance**

Much of the prior research on emotions in IT use has focused on uniform emotions (e.g., anger, anxiety) and their effect on IT use, directly and through mediating activities, such as venting or distancing (Beaudry and Pinsonneault 2010; Cenfetelli 2004). Our research extends this prior work in three ways: (1) identifying how both uniform and mixed affective responses around IT use arise in the first place (triggering cues), (2) understanding how users cope with mixed



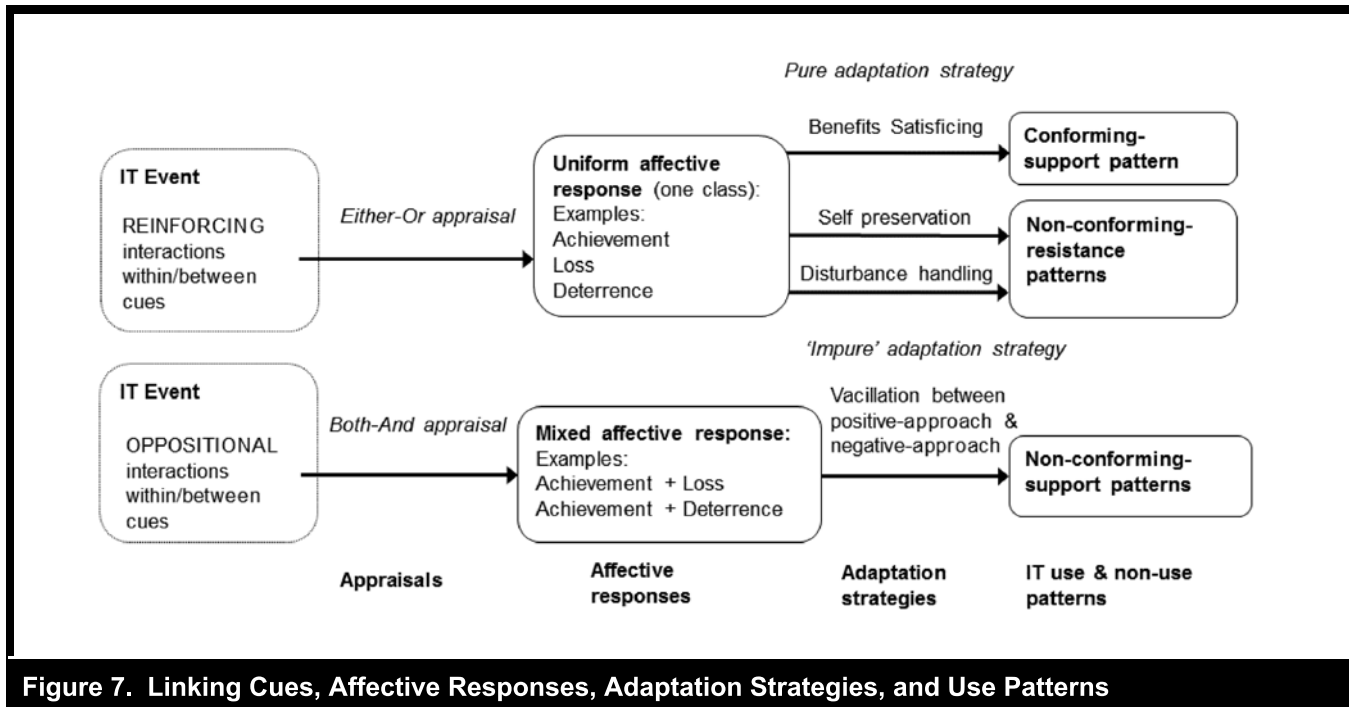


Figure 7. Linking Cues, Affective Responses, Adaptation Strategies, and Use Patterns

affective responses (see Pratt and Doucet 2000), and (3) theorizing the effect of mixed affective responses on IT use in terms of qualitatively distinct IT use patterns that may be either supportive or resistant and conforming or nonconforming to organizational terms of use (Bagayogo et al. 2013; van Offenbeek et al. 2013). As such, our study answers the calls made by Bagozzi (2007) and Ortiz de Guinea and Markus (2009) for more theorizing on how emotions enter decision-making in IT use.

### Interacting Cues: Are Some Cues More Important Than Others?

We find that both consistent and contradictory appraisals of the IT event are possible. Contradictory appraisals (e.g., an IT event is appraised as *both* a threat *and* an opportunity) are based on oppositional interactions within and/or between cues of the IT event (different aspects of the same cue or different cues are appraised in different ways). Consistent appraisals are based on reinforcing interactions within and/or between cues (different aspects of the same cue or different cues are appraised in the same way).

One implication of being able to unpack an IT stimulus event into multiple cues is the necessity to understand which cues are salient under which circumstances. We propose that three of the five cues identified in this paper (*IT instrumentality*, *IT*

*symbolism*, *identity work*), and their interactions, are likely to occupy an important role in most IT implementation projects in workplace settings. The new IT artifact itself is the focal point in implementation projects, and the instrumental constraints and opportunities the artifact offers, often in comparison with previous tools, are going to be influential in how most users adapt and come to use the new IT, regardless of specific organizational context (see Markus and Silver 2008). Further, the symbolic associations the IT artifact communicates, especially if strong and negative, can override many other concerns. This importance of IT instrumentality and IT symbolism confirms prior research that has demonstrated their key role in how physical artifacts elicit emotions (Rafaeli and Vilnai-Yavetz 2004). However, our findings showed little evidence of the third factor identified by Rafaeli and Vilnai-Yavetz: that of aesthetics. Most empirical research conducted to date that demonstrates the importance of aesthetics has focused on consumer electronic devices or websites (see Lindgaard et al. 2006; Thüning and Mahlke 2007), suggesting contexts of leisure and “infotainment.” Within work settings, aesthetics of IT may play a different role depending on whether the IT is used in the back office or is customer facing (consider, for example, the different demands of air traffic controllers and customers wanting to track the flight of a loved one). While the role of aesthetics, thus, seems undecided and requires further research, we propose that the cue of identity work is likely to be salient in most workplace contexts.

The characteristics of the new IT that users perceive in the particular work environment communicate something about the value of the users' day-to-day work activities (i.e., their status and performance in the organization). Prior research has demonstrated that people have the need to reflexively maintain a consistent biography (Obodaru 2012; Walsham 1998):

[This] sense of historical person-hood—experienced as an inchoate feeling—helps us to pick out what we find relevant about our surroundings and, in so doing, our feelings about our situation condition our state of expectancy, since we are always preparing for action (Thompson 2012, p. 195).

In studies of IT implementations across various contexts, this need to maintain a consistent biography through identity work has been demonstrated multiple times. For example, when electronic health record systems support and reinforce the identity of physicians as caregivers and professionals (e.g., enhancing their self-perception of competence), they are more likely to adopt and use the system (Mishra et al. 2012). Similar findings have also been suggested in ERP implementations (Alvarez 2008) and online communities (Ma and Agarwal 2007).

In sum, we suggest that researchers studying IT-related emotions in the workplace begin their explorations by considering the potential for IT stimuli to elicit emotions in three ways: instrumentally, symbolically, and biographically.

### **Coping with Mixed Emotions: Vacillation and Compromise**

Turning to the process through which affective cues, affective responses, and IT use patterns are linked, our findings largely confirm the pure forms of the process proposed by Beaudry and Pinsonneault (2005, 2010). We extend this process theorizing by considering impure forms, hypothetical situations considered by Beaudry and Pinsonneault where appraisals of an IT event are contradictory. We find that users cope with mixed affective responses by combining behaviors associated with different adaptation strategies, *vacillating* between positive and negative approach strategies (Pratt and Doucet 2000). It is possible that in the face of a uniform affective response, users find it easier to recognize and put a name to their emotions (Scheer 2012) and respond in ways that are typical. For example, when the affective response is anger or worry, users adopt clear coping strategies of self-preservation or disturbance handling. In the face of a mixed or ambivalent affective response, users are likely to see the stimulus event as

unusual or atypical (Fong 2006) and have more difficulty in clearly labeling their array of emotions. Given this, it is not unexpected that users are responding with a vacillating strategy, indicating an active attempt to find a compromise between the positive and negative aspects of the stimulus event to cope with the ambivalence (Pratt and Doucet 2000).

Our findings show the presence of black-and-white compromises but not the other coping strategies that research has suggested people use to deal with ambivalence, such as domination (i.e., emphasizing either only the negative or positive aspects of the stimulus), or holism (i.e., a win-win approach where both aspects of the source of ambivalence are embraced) (Ashforth et al. 2014). It is posited that different strategies people use to cope with ambivalence are more or less effective under different circumstances. For example, black-and-white compromise works well when the core of both positive and negative aspects of the stimulus need to be preserved and the user involved has at least moderate discretion or agency (ibid., p. 13). These circumstances seem to apply well in the FP case: through a black-and-white compromise, faculty members can attend to both the positive and negative elements in FP instrumentality and exercise some discretion in how to make use of this instrumentality; in short, it allows the faculty to address a problem they see, rather than escaping from or denying the problem. A gray compromise or a domination of either the positive or the negative side, conversely, would muddy the distinction between the positive and negative instrumental elements or eliminate one of them from the user's attention and, therefore, potentially hinder problem solving through exercising discretion. Holism is considered a coping mechanism in the same spirit as black-and-white compromise, but involves complete acceptance of both the positive and negative aspects of the source of ambivalence. It can be facilitated by mindful and wise actors who engage in "both/and" thinking and exercise informed choice (ibid.). In our case, this would suggest the ability of users to fully accept both the worry stemming from not being able to represent themselves as they would like in FP, and the satisfaction they gain from FP enabling report editing. Full acceptance would suggest users are able to juxtapose both emotions and convert this into a win-win opportunity rather than a trade-off. While theoretically the distinction is useful, it is difficult to describe how a manifestation of a holistic approach would differ from a black-and-white compromise.

Incorporating the possibility of ambivalence in the study of IT-related change thus opens an avenue for further research into how, when, and why users compromise (or do not) in different ways and the influence of these coping strategies on how users engage with the new IT.

### **Effects of Mixed Emotions and Compromise: Benefits of Nonconforming Use?**

We conceptualized continued IT use as a set of qualitatively distinct patterns that can be described in terms of the task, system, and user (Burton-Jones and Gallivan 2007) and grouped according to two dimensions: support/resistance and conformance/nonconformance to terms of use (Bagayogo et al. 2013; van Offenbeek et al. 2013). Being able to group the use patterns according to these two dimensions allows for the assessment of the use and nonuse behaviors in terms of their support/resistance toward the IT-associated change and their degree of conformity to organizational intent. One implication of this nuanced assessment is that it allows for both researchers and practitioners to better understand the organizational effects that seemingly detrimental user behaviors can have. For example, nonconformity can be a way for users to deal with ambivalent emotions about an IT event and to contribute to the achievement of organizational intent without sacrificing their individual satisfaction with system use. In short, while uniformly positive affective responses may seem desirable, our findings suggest—in line with prior research (Beaudry and Pinsonneault 2010)—that uniform satisfaction (achievement) leads to minimal user engagement and rather passive compliance. Ambivalent emotions, conversely, can lead to *exercising discretion* and *personalizing*, active engagement on the part of users attempting to reconcile individual and organizational intent by complying with what they see is the true intent behind FP: collecting accurate data about faculty activities, while not conforming to terms of use which they see as misaligned with this intent. For example, the requirement to submit the annual report through FP is not conformed to in the personalizing use pattern; this nonconformance allows faculty members to do their part in helping the university collect faculty activity data, while also maintaining their ability to format and personalize their annual reports and so keep some control over their performance evaluation. In terms of the universities' ability to then use the data for accreditation or budgeting purposes, the nonconformity here has no adverse effects (see Bagayogo et al. 2013). Rather, nonconformity allows users to acknowledge the presence of ambivalence and find a compromise in IT use (Ashforth et al. 2014) without resorting to avoidance (suppression of ambivalence) or mild sabotage (domination of the negative approach response).

### **Practical Implications**

Our findings show that users react emotionally to a range of cues associated with an IT implementation event. Managers tasked with implementation should not, therefore, assume that

(negative) reactions are simply related to users' (negative) perceptions of usefulness and usability of the IT artifact (i.e., IT instrumentality). Focusing only on this can lead to unintended consequences (see Rivard and Lapointe 2012; Robey and Boudreau 1999) when, for example, a manager agrees to a software modification whereas the negative affective response arose more from a user not being involved in the change process. While this may suggest that the IT itself is neutral, and affective responses reflect only organizational practices, this is not the case. The standardized classification system on which FP is built constrains faculty members' activities in real and visible ways, and contributes to the symbolism of one-size-fits-all as much as the administration's desire for standardized CVs. IT stimulus events, thus, should be considered *multidimensional with many affective cues working together*.

Accordingly, our research highlights that it is important for those tasked with implementation to take into account *all of the cues* associated with the new IT in their specific setting. However, it might be difficult for managers to gauge the particular cue that has triggered an affective response like frustration. Indeed, as we have seen, users sometimes react to the same cue with different affective responses or respond to a confluence of cues. This suggests the importance of obtaining in-depth feedback from users throughout the process, rather than simply focusing on user engagement as it relates to the functionality of the IT artifact. That being said, it is often difficult to elicit genuine feedback from users prior to going live because the project is not salient to them at that stage (Wagner and Piccoli 2007). Moreover, it is also clear that, given the range of cues to which users respond during an IT implementation event, it is infeasible to eliminate all negative affective responses. Indeed, our findings imply that not all negative affective responses are counterproductive. Instead, negative and mixed affective responses and the associated nonconforming use patterns can be seen as learning opportunities for managers, who can then pursue changes in the post-implementation period. This endorses the importance of post-implementation changes (see Wagner et al. 2010) but, importantly, our findings provide practical guidance as to what types of negotiations may prove useful. Examples include managers considering negotiations involving not just technological changes, but also changes to the organizational intent in implementing the technology. Our findings suggest that managers should attempt to recognize situations where nonconformance has no adverse organizational consequences and instead enables users to be supportive of the IT. Not countenancing nonconforming behaviors would, thus, be counterproductive, while making adjustments to terms of use may lead to better alignment between organizational intent and use patterns.

A pragmatic course of action open to managers is, therefore, not to try to root out resistance or particular coping behaviors (e.g., self-preservation and psychological distancing), but to focus on the underlying factors that can bring about changes in these behaviors naturally: namely, the interactions within and between affective cues. For example, getting users to focus on the instrumental aspects (i.e., inputting data to a system) can neutralize the task at hand (i.e., downplaying negative symbolic associations or negative interactions with implementers), and thereby help to ensure users are more likely to perform this task. At State, this was accomplished by hiring a graduate student who helped in training faculty members. Being neither a member of the faculty *nor* the administration (the decision makers around FP), this person could remain neutral and technology-oriented, helping faculty members to fill out their data without getting into heated discussions about any hidden agenda.

## Limitations, Future Research, and Concluding Thoughts

The generalizability of our research findings is limited by the fact that we have only looked at one type of IT, implemented in one type of organizational context. There are, therefore, many promising avenues for further research that could build on this study. Future examinations of other types of IT use in other (nonacademic) contexts may suggest different types of affective cues, thereby extending our findings. Longitudinal examination of cues, emotions, and use patterns could be undertaken to reveal more about the conditions under which cues change over time, and the influence of these changes on resulting emotions and use patterns. Our findings do not reveal *why* a particular cue is more or less salient for an individual user. Future research is required to identify the circumstances that lead to cues being salient—alone or in combination. Recent research on ambivalence suggests that role conflicts, contradictory goals, and multifaceted objects may be fruitful concepts to start with in identifying some of the important circumstances (Ashforth et al. 2014).

Additionally, our findings cannot reveal why users cope with mixed affective responses as they do. As described above, we only found users engaging in a vacillation strategy (specifically black-and-white compromise). While Ashforth et al. (2014) consider some of the attributes that condition how users respond to ambivalence (e.g., the need to honor both positive and negative aspects of the stimulus, user agency), future research is needed to better understand when and why users select between, for example, a black-and-white compromise and a holistic response. Furthermore, while our study

offers insights into how users respond to ambivalent emotions and the kinds of use patterns that emerge, we have limited evidence as to whether these use patterns are more or less likely to be organizationally beneficial (see Bagayogo et al. 2013). Given that users can respond to ambivalence with other strategies beyond vacillation and black-and-white compromise, it is likely that ambivalent emotions can lead to many different kinds of use patterns. The two observed in our case (exercising discretion and personalizing) were arguably helpful in terms of aligning organizational and individual intents. We must admit, though, that uncovering the true organizational intent for FP in our settings is a difficult task, suggesting that the misalignments observed between organizational intent and FP terms of use are also open to interpretation. Further field research where organizational intent, terms of use, and individual intent are clearly identifiable, is thus needed to help theorize the impact of emotional ambivalence on effective use (Burton-Jones and Grange 2013).

To conclude, our research suggests that users respond emotionally to a confluence of cues present in an IT stimulus event. The type of affective response (uniform or mixed) depends on the nature and content (positive/negative) of the cues and their interactions. People respond to their emotions with either clear adaptation strategies or a vacillating strategy. These coping behaviors and strategies are then reflected in particular IT use patterns. Use patterns contain distinct sequences of actions characteristic to the pattern, and contain elements of both use and nonuse. Tracing use patterns back to affective responses, and the particular cues that elicited these emotions, allows researchers to better understand how and why users make the IT use choices that they do.

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## COPING WITH INFORMATION TECHNOLOGY: MIXED EMOTIONS, VACILLATION, AND NONCONFORMING USE PATTERNS

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# Appendix A

## Coding and Aggregating Data

<b>Data Examples</b>	<b>Descriptive Coding</b>	<b>Interpretive Coding</b>
<p>"FP asked me to enter everything one author at a time. I tried to do it for one of the publications and it took forever. It was enough to completely alienate me." (Vice Provost, State)</p> <p>"Two most annoying things about FP: I can't edit a publication entered by a co-author and I can't see what I have entered (a report preview)" (Tenured professor, PS, Private)</p>	<p>Functionality</p> <p>Affordance</p> <p>Constraint</p>	<p>IT instrumentality</p>
<p>"The initial chairs' response—they were just furious, because the software application very much does seem to be a "one size fits all" (Department chair, A&amp;S, State)</p> <p>"Many people view it as just another bureaucratic requirement they have to fulfill." (Department chair, A&amp;S, Private)</p>	<p>Dominant association</p> <p>Metaphor</p>	<p>IT symbolism</p>
<p>"My faculty were extremely resistant to using FP, because it did not represent them in the way that they wanted to be represented either to me or to the outside world." (Department chair, A&amp;S, Private)</p> <p>"Being a faculty member—you're an artisan....So in my mind, there's a fear of the false certainty of quantifying things. Do I need to be focusing my activities so that I look good on FP or in a way that I look good on the self-crafted CV?" (Tenured professor, A&amp;S, State)</p>	<p>Performance Status</p> <p>Uniqueness</p>	<p>Identity work</p>
<p>"The outreach gave me the impression that they were trying to do a good job and for that reason I'm probably less averse to it than my faculty." (Department chair, PS, Private)</p> <p>"I think they passed up some feedback, but nothing [happened]....And nobody is talking about what the categories in FP should be, which is why there are some concerns as to where FP will lead." (Department chair, A&amp;S, State)</p>	<p>Inclusion</p> <p>Exclusion</p>	<p>Involvement in change</p>
<p>"I don't know first hand how difficult it is. I heard such horror stories—faculty and chairs tell me that it was typing it all in yourself." (Dean, State)</p> <p>"They did a good job of saying that this (FP) is a next integration of something we need." (Former department chair, A&amp;S, Private)</p>	<p>Rumors and myth</p> <p>Sales-pitch</p>	<p>Interactions with others</p>

**Table A2. Coding Scheme and Examples for IT Use Patterns**

Data Examples	Descriptive Coding	Interpretive Coding
<p>"I had all my data in FP, but when I generated a report, I had to edit it, because when you have the final report, you want to get it to look nice, but the basic information—the articles, etc.—is coming from the system." (Department chair, PS, Private)</p> <p>"I use the CV. I try to update it as I do things. So I output the CV and then I write descriptions (like duties, etc.) in Word. My publication record came out fine though. My concern is not that someone will generate my CV, because I don't have anything to hide, but I don't have any of the descriptive stuff on FP. It's great to have it output, but then I still have to do stuff afterwards. Totally reformatting, taking stuff off." (Tenured professor, A&amp;S, State)</p>	<p>Bones vs. embellishment</p>	<p><b>"Personalizing" pattern</b></p> <p>System/task: FP for data, Word for making it "nice"/your own and for submission. User: concern mixed with engaged interest.</p>
<p>"In your CV you usually start with your strongest asset. And it (FP) starts with the book chapters, usually people start with the articles. So the likelihood of using this as the basis for my CV is not very high. So that's why I have no use for FP... for my own purposes." (Tenured professor, PS, Private)</p> <p>"There was some report that showed what admin was going to be looking at. If they're only looking at seven fields, then all I'm going to put in is this year's seven fields. And I'm going to try to figure out minimally which buttons I'm going to have to choose but I'm not going to try to massage it into being in any way meaningful." (Tenured professor, A&amp;S, State)</p>	<p>Minimal effort (personal gain)</p> <p>Make yourself look good</p>	<p><b>"Gaming the system" pattern</b></p> <p>System/task: enter only that data into FP that will make you look good to the administration. User: cynicism and anxiety.</p>
<p>"So part of my thinking here is—does your administration care? Is it relevant? Does it matter for their reports? So that in my mind prioritizes the importance of dealing with some of these categories. So I'm not just filling it out for me, I'm filling this out with my own sense of institutional understanding regarding what this information is supposed to do." (Department chair, A&amp;S, Private)</p> <p>"I don't fill out the abstracts. 'Date accepted', 'date published', 'date submitted'—I usually end up filling out one of those and in the end I go back and change it to date published, so there is a few too many fields." (Tenured professor, A&amp;S, Private)</p> <p>"Departmental service is not important for me, the review is totally based on my scholarship. So I kept only professional service and scholarship. I might have left my classes on. Our courses are just pulled from our university system." (Tenured professor, A&amp;S, State)</p>	<p>Pick and choose</p>	<p><b>"Exercising discretion" pattern</b></p> <p>System/task: enter all data into FP that is important to you <i>and</i> to the university from your perspective User: frustration mixed with engaged interest</p>
<p>"I always look at last year's just because I figure it's a good starting point. It's sort of a completion check for me. I just throw everything up there that might be relevant. I like to keep track of what I'm doing. I'm just taking it one step at a time." (Tenured professor, PS, Private)</p> <p>"The first thing to do is I know in my e-mail I got the instructions that got sent to us for doing the faculty activity reports. So I'm logged into FP, so I think I'm gonna go back and read those instructions once, before I do it. The other thing I haven't done yet is - I didn't look up my report from last year. I just kind of go by the... (instructions)—student-focused activities....departmental committees." (Former department chair, A&amp;S, Private)</p>	<p>Everything in</p> <p>Follow the instructions</p>	<p><b>"Being a good citizen" pattern</b></p> <p>System/task: enter all data into FP that is required. User: neutral interest/disinterest, conscientiousness</p>
<p>"I think last year, I just didn't do it because the basic tenor around here was like it doesn't really matter, probably half the school's not doing it anyway. So why are we beating ourselves over the head." (tenured professor, A&amp;S, State)</p> <p>"There's a substantial number of faculty members who have learned over the years that if you just ignore it, it will go away. And finally it got so embarrassing they hired people to do it for us. So, in effect, it did disappear." (Department chair, PS, State)</p>	<p>Opt out</p> <p>Ignore</p>	<p><b>"Opting out" pattern</b></p> <p>System/task: no FP features used User: resentful disengagement</p>

# Appendix B

## Chains of Evidence

**Table B1. Being a Good Citizen: Evidence Chain for Use Pattern Emergence**

	Cues	Appraisal	Affective Responses	Adaptation Behaviors	IT Use Pattern
1 former department chair (A&S); Private 1 tenured professor (PS); Private	<b>IT instrumentality</b>	"There are a lot of things I have to re-enter even though they are the same answer as previously. But generally, it's a tremendous time saving when you do annual reports, because the stuff comes out in the right form." ( <b>Either-or:</b> FP seen as an opportunity)	<b>Uniform:</b> "I would say we've had a <b>good</b> adaptation. I think we installed something, we made progress."	<b>Pure: Benefits satisfying; minimal adaptation</b> (Use FP as given) "I always look at last year's just because I figure it's a good starting point. It's sort of a completion check for me. I just throw everything up there that might be relevant. I'm just taking it one step at a time."	<b>Being a Good Citizen</b> A1. I log into FP A2. I read the instructions A3. I look over last year's report. A4. I go through each section of the annual report and enter data A5. I am done with all sections A6. I generate the report in MS Word; check the report A7. I go back to edit the report in FP A8. When satisfied, I certify my report is complete in FP and submit it through FP
	<b>Interactions with others</b>	"There was a lot of 'we hear you' in the message..." ( <b>Either-or:</b> Opportunity, but little direct control)	<b>Reinforcing the uniform response:</b> "I think they [administration] did a <b>good</b> job of saying that this is a next integration of something we need."		

**Table B2. Gaming the System: Evidence Chain for Use Pattern Emergence**

	Cues	Appraisal	Affective Responses	Adaptation Behaviors	IT Use pattern
2 tenured professors (PS, Private; A&S, State)	<b>Identity work</b>	"This is some sort of silly data that is going to be looked at by higher administration and then they're going to either club you or give you brownie points. I just sort of felt it was more like a club, when it came down to it, because there was no intrinsic worth that I could see. The subtleties of what we do are not collected." ( <b>Either-or:</b> FP seen as a threat)	<b>Uniform:</b> "I was <b>fearful</b> that, just because of how I think administration looks at things, it (FP) was going to be another way that they boil it down to this number."	<b>Pure: Disturbance handling; problem and emotion-focused + psychological distancing &amp; task adaptation</b> (Work-arounds and FP as a meaningless administrative tool) "I'm going to try to figure out minimally which buttons I'm going to have to choose, but I'm not going to spend a lot of time trying to massage it into being meaningful."	<b>Gaming the System</b> B1. I log into FP B2. I go through those sections of the annual report/CV that will make me look good to the administration B3. I decide that it is enough
	<b>Involve-ment in change</b>	"At the beginning, there was talk about it [engaging faculty in FP configuration], but I haven't heard anything." ( <b>Either-or:</b> FP seen as a potential threat; desire for control)	<b>Reinforcing the uniform response:</b> "I was <b>afraid</b> that was going to be the end of the discussion."		

**Table B3. *Opting Out*: Evidence Chain for Use Pattern Emergence**

	Cues	Appraisal	Affective Responses	Adaptation Behaviors	IT Use pattern
1 department chair (PS), State 1 tenured professor (A&S), State	<b>IT symbolism</b>	"...it's simply another step in a culture of monitoring us. It feels like the software is allowing a level of monitoring that would not have been so easy before." ( <b>Either-or</b> : FP seen as a threat)	<b>Uniform</b> : "If it's not FP, it's some other thing that's gonna make us all <b>angry</b> ."	<b>Pure: Self-preservation; emotion-focused</b> (avoidance) "Faculty members have learned over the years that if you just ignore it, it will go away. And they're right."	<b>Opting Out</b> I maintain my CV/do my annual report using MS Word, EndNote, etc.
	<b>Interactions with others</b>	"It was pretty clear to me that there's no-one looking to see if vitas have been entered. No-one's ever contacted me..." ( <b>Either-or</b> : lack of control over consequences)	<b>Reinforcing the uniform response</b> : "They're <b>not</b> doing a <b>good</b> job of communicating the value of FP - either carrot or stick..."		

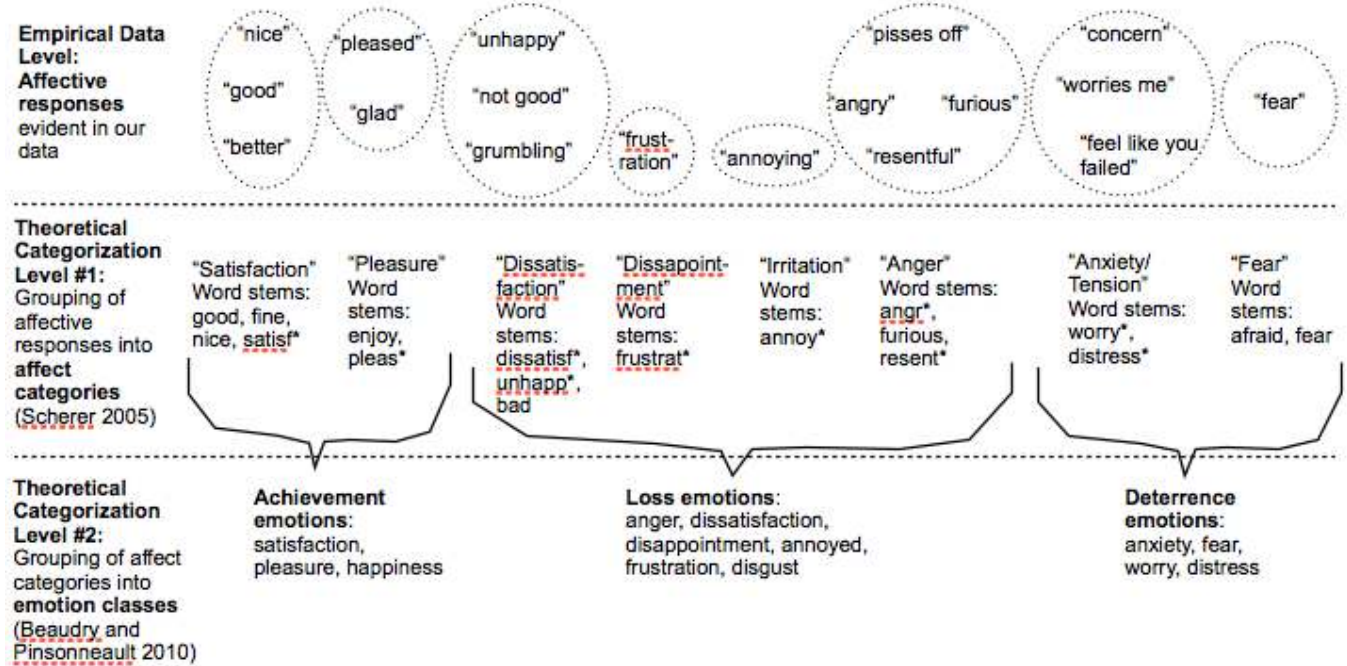
## Appendix C

### Screenshot of FP's User Interface (Main Menu)

<p><b>Activities Database Main Menu</b></p> <p><b>General Information</b></p> <ul style="list-style-type: none"> <li>▶ <a href="#">Personal and Contact Information</a></li> <li>▶ <a href="#">Faculty Activity Reporting Status</a></li> <li>▶ <a href="#">Administrative Data - Permanent Data   Yearly Data</a></li> <li>▶ <a href="#">Academic, Government, Military and Professional Positions</a></li> <li>▶ <a href="#">Administrative Assignments</a></li> <li>▶ <a href="#">Awards and Honors</a></li> <li>▶ <a href="#">Consulting</a></li> <li>▶ <a href="#">Education</a></li> <li>▶ <a href="#">External Connections and Partnerships</a></li> <li>▶ <a href="#">Faculty Development Activities Attended</a></li> <li>▶ <a href="#">Licensures and Certifications</a></li> <li>▶ <a href="#">Media Contributions</a></li> <li>▶ <a href="#">Professional Memberships</a></li> <li>▶ <a href="#">Workload Information</a></li> </ul> <p><b>Teaching</b></p> <ul style="list-style-type: none"> <li>▶ <a href="#">Academic Advising</a></li> <li>▶ <a href="#">Directed Student Learning (e.g., theses, dissertations)</a></li> <li>▶ <a href="#">Non-Credit Instruction Taught</a></li> <li>▶ <a href="#">Scheduled Teaching</a></li> </ul> <p><b>Scholarship/Research</b></p> <ul style="list-style-type: none"> <li>▶ <a href="#">Artistic and Professional Performances and Exhibits</a></li> <li>▶ <a href="#">Contracts, Grants and Sponsored Research</a></li> <li>▶ <a href="#">Intellectual Contributions</a></li> <li>▶ <a href="#">Intellectual Property (e.g., copyrights, patents)</a></li> <li>▶ <a href="#">Presentations</a></li> <li>▶ <a href="#">Research Currently in Progress</a></li> </ul> <p><b>Service</b></p> <ul style="list-style-type: none"> <li>▶ <a href="#">Department</a></li> <li>▶ <a href="#">College</a></li> <li>▶ <a href="#">University</a></li> <li>▶ <a href="#">Professional</a></li> <li>▶ <a href="#">Public</a></li> </ul> <p style="text-align: center;"><b>FP Main Menu at State</b></p>	<p><b>Activities Database Main Menu</b></p> <p><b>General Information</b></p> <ul style="list-style-type: none"> <li>▶ <a href="#">Personal and Contact Information</a></li> <li>▶ <a href="#">Administrative Data - Permanent Data   Yearly Data</a></li> <li>▶ <a href="#">Academic/Professional Positions, Joint External Appointments, etc.</a></li> <li>▶ <a href="#">Administrative Assignments</a></li> <li>▶ <a href="#">Awards and Honors</a></li> <li>▶ <a href="#">Consulting</a></li> <li>▶ <a href="#">Education</a></li> <li>▶ <a href="#">Faculty Development Activities</a></li> <li>▶ <a href="#">Licensures, Certifications, and Other Professional Distinctions</a></li> <li>▶ <a href="#">Media Contributions</a></li> <li>▶ <a href="#">Professional Memberships</a></li> <li>▶ <a href="#">Profile Information</a></li> </ul> <p><b>Teaching</b></p> <ul style="list-style-type: none"> <li>▶ <a href="#">Academic Advising</a></li> <li>▶ <a href="#">Ph.D. Advising</a></li> <li>▶ <a href="#">Internships, Directed Study, and Tutorials</a></li> <li>▶ <a href="#">Non-Credit Instruction: Executive Education, Guest Lecture, Seminar, etc.</a></li> </ul> <p><b>Scholarship/Research</b></p> <ul style="list-style-type: none"> <li>▶ <a href="#">Journal Articles, Books/Chapters, Cases, etc.</a></li> <li>▶ <a href="#">Conference/Academic Presentations</a></li> <li>▶ <a href="#">Contracts, Grants and Sponsored Research</a></li> <li>▶ <a href="#">Artistic and Professional Performances and Exhibits</a></li> <li>▶ <a href="#">Patents and Copyrights</a></li> </ul> <p><b>Service</b></p> <ul style="list-style-type: none"> <li>▶ <a href="#">Department</a></li> <li>▶ <a href="#">University</a></li> <li>▶ <a href="#">Professional</a></li> <li>▶ <a href="#">Public</a></li> </ul> <p><b>Annual Activity Report</b></p> <ul style="list-style-type: none"> <li>▶ <a href="#">Teaching Activities - Courses   Instructional Resources and Narrative</a></li> <li>▶ <a href="#">Scholarly Resources and Narrative</a></li> <li>▶ <a href="#">Service Resources and Narrative</a></li> <li>▶ <a href="#">Professional Development Resources and Narrative</a></li> <li>▶ <a href="#">Overall Self-Assessment</a></li> <li>▶ <a href="#">Certify Complete</a></li> </ul> <p><b>Annual Planning Report</b></p> <ul style="list-style-type: none"> <li>▶ <a href="#">Teaching and Curriculum Development Plans</a></li> <li>▶ <a href="#">Scholarly Activity Plans</a></li> <li>▶ <a href="#">Service Plans</a></li> <li>▶ <a href="#">Professional Development Plans</a></li> <li>▶ <a href="#">Overall Narrative and Profile Request</a></li> <li>▶ <a href="#">Certify Complete</a></li> </ul> <p style="text-align: center;"><b>FP Main Menu at Private</b></p>
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# Appendix D

## Categorizing Affective Responses



### References

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